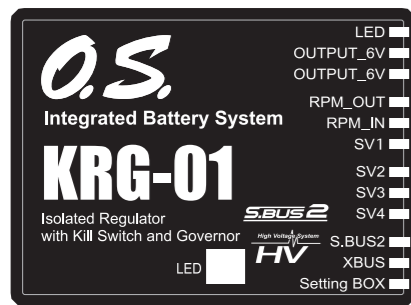


**KILL SWITCH with Isolated Regulator  
KRG-01**



Attention: Read the following instruction before use.  
Refer to this instruction whenever it is necessary.

**Instruction manual**

Thank you for purchasing Remote Kill Switch KRG-01.

KRG-01 can turn on/off an ignitor of a gasoline engine by connecting it to a vacant switch channel of a receiver.

In addition, it has 4 output ports for the conventional system and a governor function. The engine rotation fluctuation can be suppressed, and disturbance of the aircraft attitude due to load fluctuation (reaction torque) can be suppressed.

In addition, since an insulated regulator is installed, an extra battery for the igniter is not required and can be shared with the battery for the receiver.

Corresponding system : S.BUS2, XBus receivers

\*1 A high brightness LED and 3 pieces of connecting cables are included in KRG-01 set.

\*2 A vacant switch channel in the receiver is necessary for on/off control.

\*3 It is possible to change the channel number from a transmitter.

※ the factory setting is “5ch”.

**PRECAUTIONS**

**⚠ WARNINGS**

- ⚠ Allow a slight amount of slack in the KRG-01 cables and fix it at a suitable location to prevent any damage from vibration during flight.
- ⚠ To utilize the KRG-01 connect it to the S.BUS2/XBUS port.
  - The will not function properly if connected to other channel ports.
- ⚠ Ensure that the unit is connected properly to the receiver. Failure to do could result in damage to the sensor.
- ⚠ Always use double-stick sponge tape to attach the sensor to the mechanics.
  - As with any electronic components, proper precautions are urged to prolong the life and increase the performance of he KRG-01.
- ⚠ To ensure that the KRG-01 is functioning as desired, please test accordingly.
  - Do not fly until inspection is complete.
- ⚠ Ensure that the unit is mounted in an area that will eliminate exposure to fuel, water and vibration.
  - As with any electronic components, proper precautions are urged to prolong the life and increase the performance of he KRG-01.

**Specification of KRG-01**

**(Kill Switch)**  
 Input voltage : 4.7V-7.4V (usable voltage range 4.5 – 8.4V)  
 Output voltage : 6.0V (Dual output system adopted)  
 Current output : 2A  
 Consumption current : 100mA  
 (6.0V,no load,without LED,servo)

**(Governor)**  
 Control System : Digital advance control  
 Detection System : Motor pulse sensing system  
 Governor Resolution : 0.1Hz (±6rpm) (Engine RPM)  
 RPM Accuracy : ±1%  
 Head Speed Range : 700 ~ 4,000rpm  
 Operating Temperature : -10 ~ +45°C  
 Dimention : 37.0 x 50.2 x 15.9mm  
 Weight : 30g

● Pay careful attention to the advices with the following headings.

**⚠ DANGER**  
 This covers the possibility which might involve death and serous injury.

**⚠ WARNINGS**  
 These cover the possibilities which might involve death and serious injury and also may cause damage or injury.

**⚠ NOTES**  
 These cover the many other possibilities, generally less obvious source of danger, but which, under certain circumstances, may also cause danger or injury.

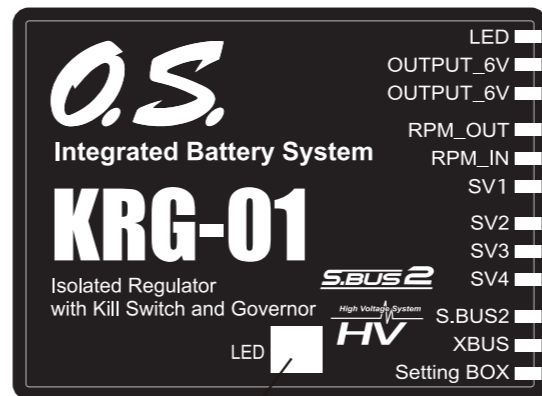
Graphic symbols: ⚠ ; Prohibited items

⚠ ; Items never fail to take action

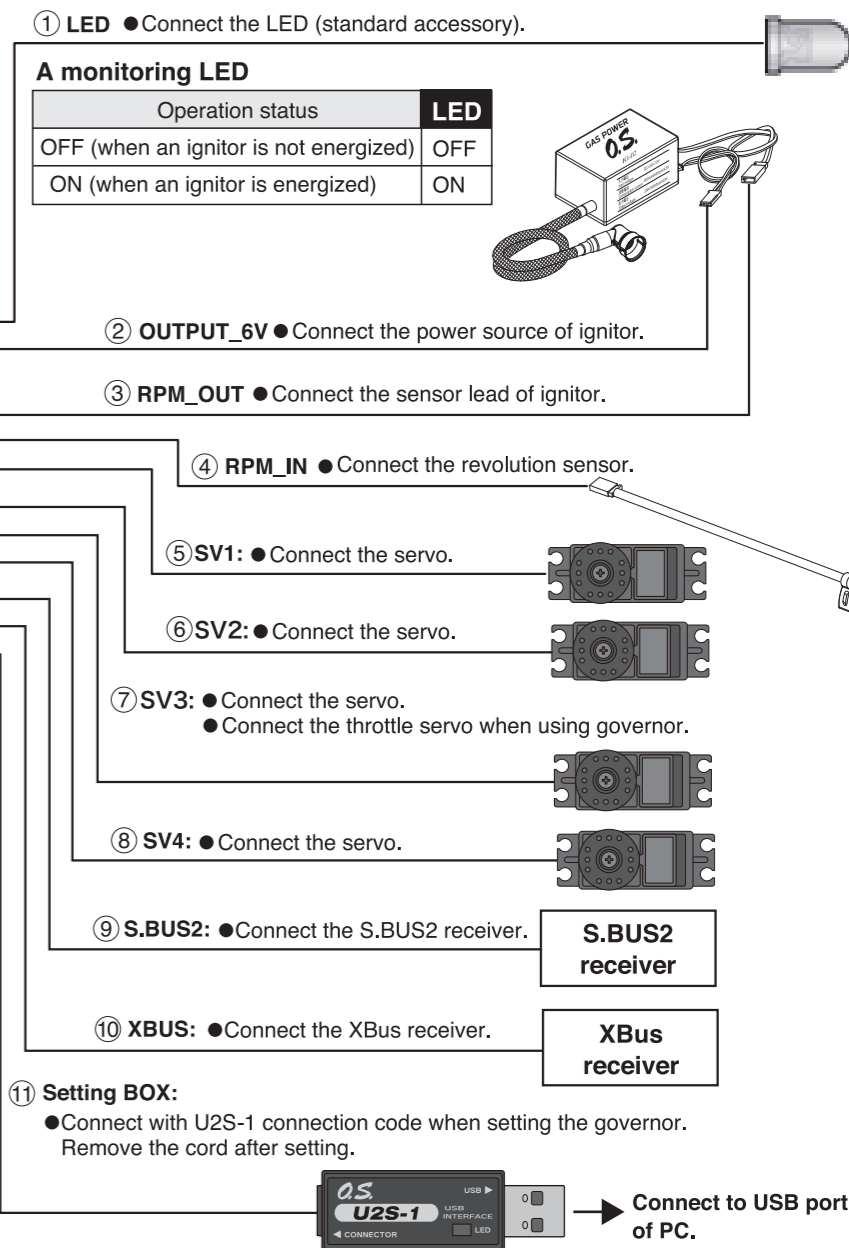
**How to use**

● **Connecting The KRG-01**

※Connect the receiver battery to one of the “SV1” to “Setting BOX” connectors oher than “LED” to “RPM\_IN”.  
 (Do not connect to “LED” to “RPM\_IN”)



LED	STATUS
Solid green	Normal operation
Solid red	No signal reception
Red and Green light blinking alternately	Unrecoverable failure(EEPROM,etc.) Turn the power off/on once again to return to normal operation. If this is not successful,please contact our customer service center.



**Operation check and notes**

1. Connect KRG-01 to a receiver as shown above.
2. KRG-01 has two operation modes.  
Set transmitter referring to the following.

● **Normal mode**

You can turn on/off the ignitor by one switch on/off action of a toggle switch on a transmitter.

**How to set:**

Decide which toggle switch and channel is to be used.  
 Set the operation amount 100% for both sides using the End Point function. Turn on KRG-01.  
 Make sure the direction of toggle switch to turn ON/OFF the ignitor. Use the Reverse function in case the direction to be changed.

● **Safe mode**

Switch on/off action to be done twice in 0.5 second to turn on/off the ignitor to avoid an erroneous operation.

**How to set:**

Decide which toggle switch and channel is to be used.  
 Set the operation amount 50% for both sides using the End Point function. Turn on KRG-01.  
 Make sure the direction of toggle switch to turn ON/OFF the ignitor. Use the Reverse function in case the direction to be changed.

※ In case the neutral position is considerably altered by trim setting, the toggle switch cannot turn on/off properly. So make the trim setting “0”.

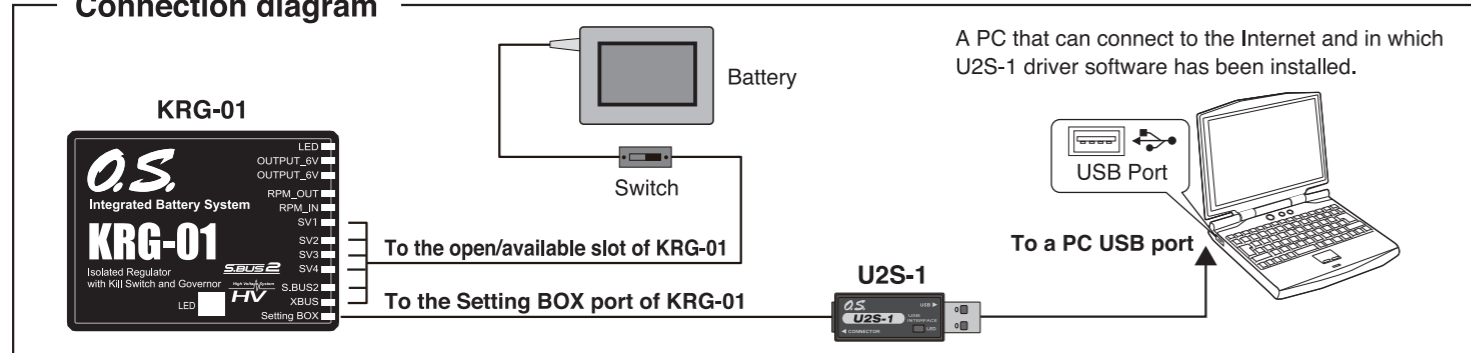
※ In case the toggle switch is at “on” position when the transmitter is turned on, KRG-01 is not activated. The toggle switch needs to be turned off before turning on the transmitter.

※ Turn off and turn on KRG-01 again when the End Point value is altered.

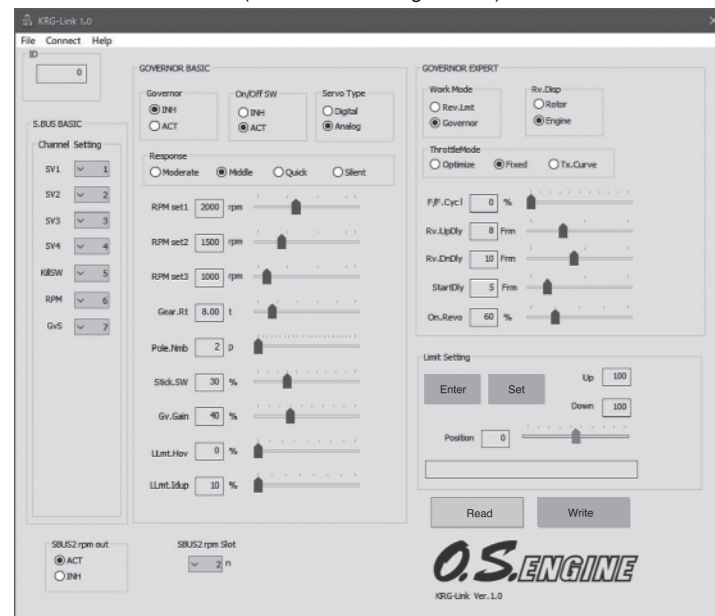
# Setting of each parameter (when using the governor function)

Various operation parameters of KRG-01 can be changed by using KRG-Link software. However, this software uses a separately sold U2S-1 USB adapter and battery for the receiver, and is used by connecting a KRG-01 to a PC (personal computer)

## Connection diagram



(Parameter setting screen)



Install the KRG-Link program file from the O.S. ENGINES homepage (<http://www.os-engines.co.jp/dll/air>) on your PC.

## ● Setting method

When the "Read" button is pressed while the KRG-01 is connected to the PC, the current settings of the KRG-01 are loaded on the parameter setting screen. Use the select box or slide knob to change the settings.

**[Important]** After setting the KRG-01 parameters on the screen, press the "Write" button to write in to the KRG-01. Setting data will not be written in to KRG-01 just by setting the parameters.

### ① Channel

[default : kill switch = 5, RPM = 6, Governor ON/OFF = 7]

You can use SV1~SV4 freely. Decide CH number of Kill switch channel, RPM setting channel, Governor ON/OFF channel.

### ② Servo limit point settings

[default : Left = 100, Right = 100] [setting range : 50~150]

This is to set the moving angle of a servo. The settings are to be done after mounting KRG-01 on the aircraft. Click "IMPUT" to enter the setting mode. Move the slide knob to the end and check the servo movement not to push/pull the linkage too much. Click "SET" button to memorize the position. Then move the slide knob to the other end and do the same. The limit value cannot be set less than 50%. When the both positions are decided, click "Write" button to transmit the data to KRG-01.

### ③ Governor movement

[default : INH]

This is to set the governor movement. Default setting is governor INH. Select INH in case you do not use the governor.

### ④ Governor ON/OFF switch

[default : ACT]

This is to turn ON/OFF the governor using a lever switch on the transmitter.

#### Setting of the governor function by an ON/OFF switch

※Choose a channel for the ON/OFF switch in S.BUS2 basic setting, "governor ON/OFF channel"

When you turn on the switch, the governor is ready to work as follows.

- When the throttle stick is moved up from the bottom to 60% up or more, the governor is turned ON.
- When the throttle stick is moved down to the bottom, the governor is still ON.
- When the ON/OFF switch is turned off, the governor is turned OFF.

### ⑤ Choosing the servo type

[default : analog servo]

This is to decide which type of servos is used. Digital servos respond quicker than analog ones.

### ⑥ Governor response

[default : Middle]

This is to set the speed of governor response. The governor performs best when the speed of governor response and the speed of acceleration/deceleration of the engine (motor) is the same. Generally, the setting of this parameter we recommend is as follows.  
Glow engine → Middle  
Gasoline engine → Moderate  
Brushless motor → Quick  
Brushless motor using a RPM sensor, which picks up RPM data directly from an ESC Silent, we recommend

### ⑦ RPM setting

[setting range : 700rpm ~ 4,000 rpm]

This is to set rpm of the main rotor. Determine the engine rpm from the gear ratio of the main shaft.

### ⑧ Determine the gear ratio

[default : 8.00] [setting range : 1 ~ 50]

Input the gear ratio of the main shaft.

#### About the rotor gear ratio

- Incorrect gear ratio setting makes discrepancy between the set rpm and the actual rpm of the engine.  
The gear ratio is written in instruction manual of the aircraft (helicopter).

### ⑨ Pole number

[default : 2p] [setting range : 2p ~ 24p]

This is to set the poles of motor. Input the quantity of pole in the brushless motor to detect rpm. In case of using an internal combustion engine, input the value 2P (default setting).

The range of input signal of the rotation sensor should be between 0V and 3.0V. Make sure not to exceed the maximum voltage not to damage the KRG-01.

### ⑩ Stick switch

[default : 30%] [setting range : 0% ~ 100%]

The governor can be activated by throttle stick position. When the governor ON/OFF switch function is inhibited (INH), or the governor ON/OFF switch is not functioned, the stick switch is always activated (ACT).

#### When idle up

When the throttle curve is set at idle up, when the throttle output is over the set value (default: 30%), the governor will always remain ON even if the stick is lowered to the bottom.

#### When turn ON/OFF the governor with the switch

In advance, select the ON/OFF switch channel with "GOV sw channel" on "SBUS BASIC" menu.

When the governor turned ON/OFF by switch, setting the switch to the ON position turns on the governor. The following describes this operation.

- When the stick switch stays within a governor ON position and output level is more than 60% → the governor is ON
- When the stick switch stays within a governor ON position → the governor is kept turned ON
- When the stick switch is moved down lower than the governor ON position → the governor is turned OFF

(Governor operating point)

Set speed

Set point or more and 60% of set speed

(OFF at slow side)

Set point or less (OFF range)

### ⑪ Governor gain

[default : Moderate=30%, Middle=40%, Quick=60%, Silent=10%]  
[setting range : 10% ~ 100%]

This is to set the governor operation sensitivity. When the response of the governor is changed, all the settings become default. Too low of number causes fluctuation of the RPM with collective pitch and cyclic changes. Too high of gain causes the RPM oscillation and possibly surging during flight.

### ⑫ Low limit hovering

[default : 0%] [setting range : 0% ~ 80%]

This is to set the limit to control excessive throttle close during hovering when the governor is activated.

### ⑬ Low limit idle up

[default : 10%] [setting range : 10% ~ 80%]

Low RPM limit sets the minimum amount of throttle that the governor will command during an over-speed situation. Too low of the value, the engine could shut off or would not recover power quickly enough during the next collective movement. If the value is set too high, the governor will not control over-speed with the rotor head unloaded.

### ⑭ Governor working mode

[default : governor mode]

This is to set the governing type mode.

RPM is entirely controlled by the governor once it has engaged.

The governor will do whatever it takes to hold a constant RPM throughout flight. In Rev. limit mode, set the throttle data mode "Tx curve" mode and set the throttle curve with a transmitter.

### ⑮ RPM display mode

[default : ENGINE]

Ability to choose to display desired Rotor RPM or Engine RPM.

### ⑯ Throttle data mode

[default : Fixed]

This parameter selects the throttle input operation.

**Optimize** : KRG-01 sets the throttle input signal to optimum. There is no need to consider the throttle curve setting on the transmitter.

**Fixed** : The fixed throttle input is utilized related to the revolution. It is recommended for electric motors.

**Tx. Curve** : KRG-01 uses the exact throttle input from the transmitter. The throttle curve setting on the transmitter is required.

When the Rev. limit mode is selected, this mode should be selected

### ⑰ Feed forward cyclic mode

[default : 0%] [setting range : 0% ~ ]

Increasing the value will add throttle with cyclic commands to aid in RPM stability.

### ⑱ Revolution up delay

[default : 8] [setting range : 2 ~ 20]

How quickly the RPM changes when increasing RPM between two different RPM conditions and flight modes. A higher value slows the RPM change rate; a lower value speeds up the RPM change rate.

### ⑲ Revolution down delay

[default : 10] [setting range : 2 ~ 20]

How quickly the RPM changes when reducing RPM between two different RPM conditions and flight modes. A higher value slows the RPM change rate; a lower value speeds up the RPM change rate.

### ⑳ Start delay

[default : 5] [setting range : 2 ~ 20]

How quickly the RPM stabilized to the set RPM from when the governor is turned ON. A higher value slows down the spool up rate; a lower value speeds up the spool up rate.

### ㉑ Governor ON revolution setting

[default : 60%] [setting range : 50% ~ 90%]

This parameter tells the governor at what percentage of the set RPM it is to become active. The default value is 60%. In this case, the governor will not engage until the engine RPM reaches 60% of the set RPM. IF you feel that the time for governor engagement is too slow, decrease the value to 50 – 55%. The starting time will become faster.

### ㉒ SBUS2 rpm out (RPM display on transmitter)

[default : ACT]

When displaying the rpm with the telemetry function, set it to ACT

### ㉓ SBUS2 rpm Slot (RPM display on transmitter)

[default : 2h] [setting range : 1h ~ 31h]

Set the slot number of the telemetry rotation sensor registered on the transmitter side.

#### ● SBUS2 rpm

By the telemetry function, the number of revolutions read by the governor sensor can be displayed on the monitor of the transmitter. In order to be able to display, activate the telemetry rotation sensor (SBS-01RM) on the transmitter and set the gear ratio to 1.00.

**Note** : It can not be used when the transmitter is FASSTest 12CH system and XBus system.

※ When using the KRG-01 for the first time, or when making changes in the throw of a servo and its linkage, always perform the limit setting operation.

※ For Futaba transmitters, set the throttle channel reverse function to reverse.

**O.S. ENGINES MFG.CO.LTD.**

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