

ACUVANCE

Sensor Controlled Brushless Motor

LUXON

BS Dual

INSTRUCTION MANUAL

Thank you for purchasing the ACUVANCE Sensor-Controlled Brushless Motor.

This motor provides the best performance when used in combination with the ACUVANCE brushless ESC "TACHYON". To obtain 100% performance of this product, be sure to read this instruction manual. After reading this manual, keep it carefully.



*LUXON BS Dual is a motor dedicated to sensor-controlled brushless ESC. It is not applicable to sensorless ESC.

FEATURES OF LUXON

[A next-generation design that considers beauty during in-vehicle installation]

The machined aluminum body has been sealed with solid-feeling lines and laser processed markings, producing a high-grade strength.

[Rotor with excellent heat resistance]

A permanent magnet is remarkably affected by temperature change. When a certain temperature is exceeded, a magnet will lose magnetic force, and magnetic force cannot be recovered even if the magnet is restored to the original temperature. To prevent loss of magnetic force due to a temperature rise, LUXON uses a sintered rotor equipped with a neodymium magnet that provides excellent heat resistance.

[Equipped with Motor Timing Adjustment Function]

The LUXON BS main unit has been equipped with an adjustment function that allows you to easily set the motor timing from 0 to 50°.

[Achieves an increase in output efficiency through its specialized manufacturing process]

A common feature of the LUXON Series is what has been called the "silky-feeling" of the motor control performance, which reacts directly to throttle control. The BS Series actively utilizes this feature along with the inclusion of a uniquely-shaped cooling fin. The multiplier effect that is created between this and the porous structure of its cooling holes produces high cooling performance. The LUXON BS does not rely on the volume of the neodymium magnet, providing the motor itself with high output characteristics! It also uses both torque during acceleration, and rolling in neutral, two direct operational feelings that are opposed to each other.

[Built-in bass sound system]

The fin that has been equipped to the rotor shaft delivers impressive sound.

*In order to prevent failure, adjust the motor timing to 60° or below to match the settings in the ESC.

PRECAUTION FOR USE

•Before using this product, carefully read the important warnings described in this instruction manual to understand the instructions thoroughly.



DANGER Instructions that the user must observe to prevent serious injury.



CAUTION Useful information for handling this product.



WARNING Instructions that the user must observe to prevent accidents.

•About installation



DANGER To prevent accident and fault:

Conduct wiring work carefully. If a connecting part comes off under vibration during travel, motor control may be disabled.



WARNING To prevent accident and fault:

The soldering of each part must be conducted within 5 seconds.
Applying heat for a long period causes damage to the electronic components.

•About cable connections



CAUTION To prevent accident and fault:

Make sure that the cables are properly connected. Do not connect the power supply with reverse polarities. Be sure to insulate cable connection terminals. If the connection terminals are short-circuited, it may result in damage to this product.

•About modification



DANGER To prevent smoke, fire and burns:

Never attempt to solder the circuit board and electronic components in the motor.

•Handling precautions



DANGER To prevent smoke, fire and burns:

During use of this product (when a power supply is connected to the motor, or when the power switch is ON), keep watching the motor. If an abnormal condition occurs, it may result in fire or other accident.



CAUTION To prevent accident and fault:

Do not install this product in a place where water, oil, fuel or other conductive liquids are present. Electronic components are vulnerable to minerals contained in such liquids. If the product becomes wet with such liquids, immediately stop operation, and dry it.



CAUTION To prevent accident and fault:

Be sure not to use the motor in fully-throttled condition, if the motor is not incorporated in a chassis drive unit. Running the motor at a high speed under no load causes damage to the motor.

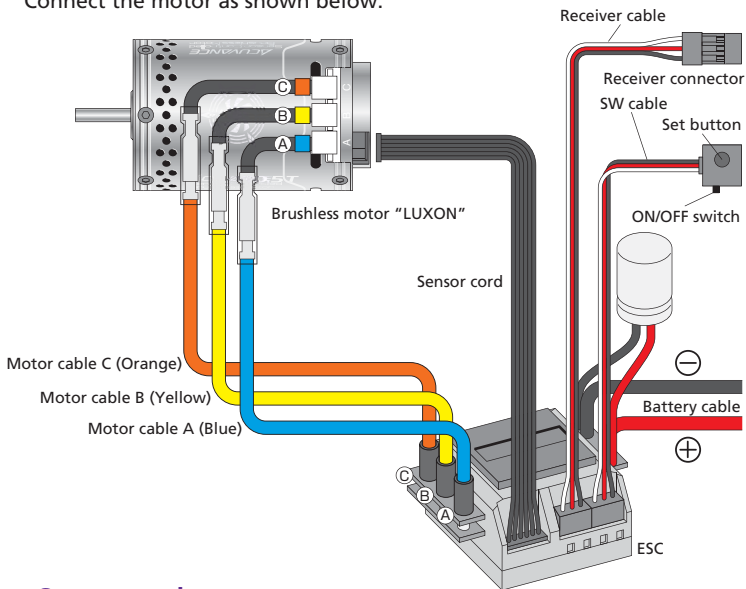


CAUTION To prevent accident and fault:

If an improper gear ratio is selected, it results in motor overload, causing the motor to be damaged by abnormal heating. Select an appropriate gear ratio carefully.

CONNECTIONS

Connect the motor as shown below:



•Sensor cord

The sensor cord transmits a position signal of Hall element to a speed controller (hereinafter, referred to as ESC). Since the ESC and the motor use the same type of connector, there is no limitation in cord inserting direction. However, when inserting the cord, match the cord with the connector shape. If the sensor cord is not connected, the ESC initial setup cannot be performed. (During travel, keep the sensor cord connected to the ESC.)

Connect the sensor cord securely, because a contact failure causes malfunction and damage to equipment. Modification of the sensor cord causes a failure of the motor. Never attempt to modify the sensor cord.

CAUTION When performing in-vehicle installation, do not group the motor cable with the sensor wire. Noise may cause improper operation.

•Motor cables (A, B, C)

The motor cables are used to apply a voltage to the motor coil at appropriate timing, according to the signal transmitted to the ESC via the sensor cord.

To connect the LUXON to the ACUVANCE ESC "TACHYON", soldering work is not required. A cable with a connector plug is attached to the LUXON in advance.

**WARNING**

To connect the LUXON to the ESC, be sure to connect the cables with the "A", "B" and "C" symbols matched with each other. If a cable with a different symbol is connected, motor rotation control is disabled. Furthermore, a large current may flow through the ESC and the motor, resulting in damage and burnout of the equipment. Unlike the sensorless type brushless motor, the LUXON cannot change the rotating direction even if the cable connections are exchanged. Change the rotating direction* with the ESC, as required.

* To change the motor rotating direction, a rotating direction change function is required for the ESC. (TACHYON provides this function).

**WARNING**

To replace the motor cable, use a soldering iron which provides a large soldering tip area and high output (approx. 70 W), and quickly conduct the soldering work. If a soldering iron's output is low, solder is hard to melt, disabling secure connections of the cables. This may result in cable disconnection or contact failure when vibration is applied to the cable. If heat application time is excessively long, it causes damage to the internal parts. (Use thorough caution so that the terminals will not be short-circuited by solder.)

**WARNING**

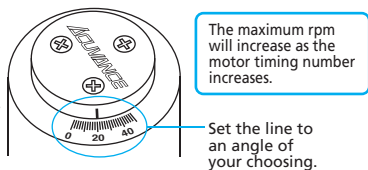
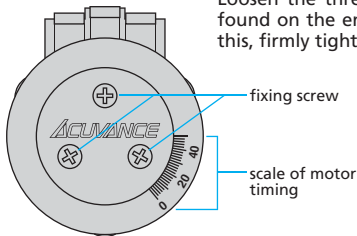
To fasten the motor to the motor mount, be sure to use screws with up to 8 mm length.

**CAUTION**

Various wires/cables will deteriorate due to usage conditions and aging. This may result in the loss of performance for the motor/ESC main unit and in some cases, it may result in damage, so the replacement of various wires/cables in a timely manner is recommended.

How to adjust motor timing

Loosen the three fixing screws and then match the line found on the end-bell with the motor timing scale. After this, firmly tighten the three fixing screws.



In order to prevent failure, adjust the motor timing to 60° or below to match the settings in the ESC.

SPECIFICATIONS

The specifications are subject to change without prior notice.

	7.5T	8.5T	9.5T	10.5T	13.5T	17.5T
Allowable voltage (V)*1	4.8~11.1					
KV (rpm/V)	4,900	4,360	3,910	3,650	2,850	2,220
Power (W)*2	410	390	350	320	250	200
Efficiency (%)*2	90	91	92	92	92	92
Rotor type	Sintered rotor, ϕ 12.3 mm (Neodymium magnet)					
Coil winding method	Star-winding					

*1: Allowable voltage of the motor. Pay attention to the ESC's allowable voltage.

*2: With 7.2 V input (4.5T: 6.0 V), Under no load

REFERENCE GEAR RATIO

Select an appropriate gear ratio based on the reference values listed below. The following values are only for your reference. The optimum gear ratio varies depending on the ESC performance, machine settings and characteristics of the traveling course. Determine the optimum gear ratio by observing heating-up condition of the ESC and the motor.

	7.5T	8.5T	9.5T	10.5T	13.5T	17.5T
On-road technical course [7.2 - 7.4 V]	6.8:1	6.6:1	6.2:1	5.0:1	4.4:1	3.5:1
On-road technical course [6.0 V]	6.3:1	6.0:1	5.6:1	5.2:1	4.6:1	3.7:1
Off-road 2WD	9.8:1	9.5:1	9.0:1	8.5:1	7.4:1	6.7:1
Off-road 4WD	9.0:1	8.6:1	8.2:1	7.8:1	6.5:1	5.6:1
Off-road truck	7.6:1	7.3:1	7.0:1	6.7:1	5.5:1	4.6:1

ACUVANCE has prepared many option parts for the motor and ESC. Check the ACUVANCE homepage for details.

Option Parts

- * High Density Sensor Wire (50, 100, 250mm) / ¥800, ¥1,000
- * Switch Wire (50, 100mm) / ¥800
- * RX Wire (50, 100, 200mm) / ¥800, ¥1,000
- * Power Transmission Connector Variety / ¥350-¥700
- * Bearing Replacer / ¥3,500
- * high Efficiency Ceramic Ball Bearing / ¥2,000
- * High Density Wire 12Gauge 14Gauge / ¥600, ¥1,000



After use, the product must be disposed of with an appropriate method in consideration of the environment.

Repair Conditions

1. Parts that can be repaired.:
 - Internal electronic circuitry
 - Damage caused by incorrect connection, inter-terminal shorting, or driving is not covered by warranty.**
2. Note that this device will not be covered under warranty if the housing has been opened.
3. **ACUVANCE assumes no responsibility for damage to the receiver or servo caused by the incorrect connection of this product.**
4. Note that if the repair card (located below) or the repair sheet (on the homepage) is not properly filled out, repair and return of the ESC may be delayed.

Warranty

Item Manufacture no.	LUXON BS DUAL	Purchase date	(M/D/Y)	/	/
		Warranty term	3 months from purchase date		
Customer Address E-mail Phone number	(@) Tel. no.				
Name					

Note that if the date and location of the motor purchase are not entered on the warranty card, you will be charged for repairs even within the warranty term.

- If a failure occurs within three months of purchasing the motor, write the symptoms of the problem and operating conditions in the section below and attach this to the product. For repair, send the motor to the distributor where you purchased the product or directly to ACUVANCE (Technical Service Department).
- ACUVANCE assumes no responsibility for damage or loss occurring during transportation of the product. Please take note of this beforehand.
- When listing the symptoms for a repair request, you can conveniently use the repair sheet on the ACUVANCE homepage and then send this along with the warranty card. (Click the "repair" section located in the upper-right side of our homepage. Then click "repair sheet", located on the left side.)

Repair card

1. Symptoms

Write the symptoms of the problem, giving as much detail as possible.

2. Payment for repair charges

- There is no need to contact me, if the charges are at or below 5,250 yen, no contact is necessary
- I would like to be contacted if there is compensation

* Though it depends on the details of the repair, indicating in advance that no contact is necessary will normally shorten the time it takes to complete the repair.

ACUVANCE CORPORATION

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Distributor's name
(shop name, address, and tel. no.)