TVC-S-32LS HT

3A dual speed controller with light control for RC halftracks

The controller contains all components for controlling two DC motors in a halftrack vehicle. The mixer is designed for half-track vehicles, i.e. up to the full steering deflection the inside track slows to 50% of the outside track speed.

The controller is equipped with BEC and five switch outputs for flasher left and right, brake- and reverse light that are controlled according to the drive manoeuvres.

1 Note

Installation of the module requires intermediate to advanced modeling skills. Soldering skills are required to connect the wiring. Inexperienced modelers and persons aged under 16 years old should seek the assistance of an experienced modeler. Always switch off power when working on the wiring. Especial take care when connecting more than one receiver energy source. Prevent the device from getting wet. Check loads before connecting them to the modul at a current limited, or fuse protected source.

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2.1 Manual control

2.1.1 Channel 1 - proportional forward/backward

Direction of rotation for the motor. Reversing lights on/off, brake lights are also derived from the throttle channel).

2.1.2 Channel 2 - proportional left/right

The integrated mixer calculates the engine speed required for steering from this channel. The control of the turn signals is also derived from this channel. It is usually connected to the steering channel with a V-cable, parallel to the steering servo.

2.2 Drive dynamic functions

2.2.1 Reversing lights

The reverse light output is turned on as soon as the throttle lever steers backward. Once the throttle is in neutral or straight, the reverse light is turned off.

2.2.2 Indicator Left + Right

From a minimum speed of approx. 10% of the maximum speed, the automatic blinker switches on. When the steering is in the right position, the right turn signal is flashing, when the steering is in the left position, the left turn signal output flashes with a frequency of approx. 1Hz. The automatic turn signal is only active in the driving mode. The hazard warning light can be switched on or off by the light mode 2.

2.2.3 Brake light

The brake light turns on automatically when the vehicle is decelerating. The more deceleration, the longer the brake light is on. If acceleration is resumed, the brake light switches off immediately.

3 Installation

3.1 Connection of batteries cable

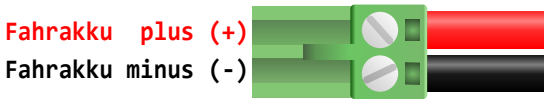

Figure 1: Assignment of the plug for the power supply

The connection is made with the green contact block. Please ensure that the polarity of the supply voltage is correct! (see illustration1)

It is a good practice to install a switch between battery and the power connector. Always break only the plus connection.

There is a fuse which is soldered onto the circuit board. If this fuse has tripped, the BEC no longer supplies any voltage and the controller no longer functions.

3.2 Connecting the motors

Black, plug-in screw terminals are provided for the drive motors. One motor is connected to each screw terminal. The motors must be radio interference suppressed, as is usual in model building.

3.3 Connecting the lights

The light outputs switch against the negative pole. The positive pole of the battery is opposite the switching output. When switched on, the voltage of the battery is applied to the lamp. Make sure that the illuminant is suitable for the voltage. If the controller is operated e.g. with a 12 Volt accumulator, the consumer should be should also be designed for 12V nominal voltage. When connecting LEDs, series resistors are required.
Since the minus is switched, you can lead the plus as a common connection to lamp groups.

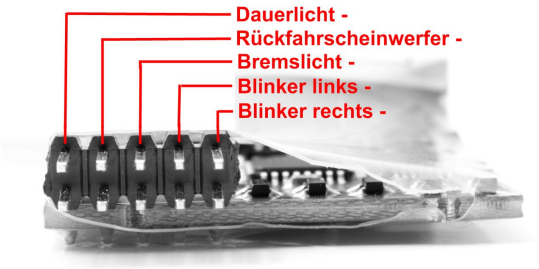

Figure 2: Assignment of the light outputs

3.4 Connecting the servo cables

The connection to the receiver is made using cables with jr connectors. The assignemt is shown in figure 3.

Figure 3: servo cable assignment

One servo cable is for the direction of travel, the second for the speed.

chanel	function	optional
1	speed	no
2	direction	yes

The speed input must be connected. The servo cable for the steering does not need to be plugged in. If it is not plugged, both outputs run with the same speed.
The steering servo for controlling the front wheels can be connected in parallel to the steering channel with a Y-cable.

Or you can operate it via another RC channel. You can then determine the differential effect yourself.

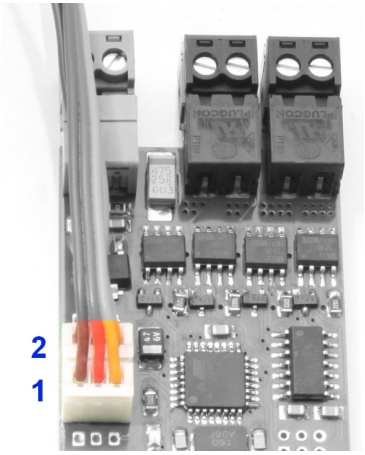

Figure 4: Servo channel assignment

The built-in BEC regulator supplies power to the receiver via the servo cables.

general note The receiver also acts as a power busbar via which all connected loads are connected. If there is now a second ESC with BEC in the model, two sources supply the receiver and all consumers connected to it. This is not possible with all types of BEC controllers and, in the worst case, can lead to the destruction of the electronics.

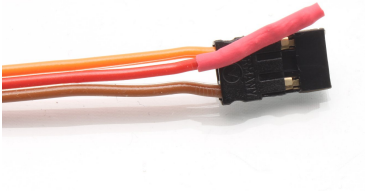

Figure 5: Removed and insulated + supply cable in the servo plug

Therefore, always ensure that there is only one source for supplying the receiver. Disconnect the BEC supply for all other controllers by pulling the

red + wire out of the servo connector.

4 Commissioning

4.1 Startup

1. switch on the transmitter
2. set the throttle and control levers to the center position (the corresponding trim as well).
3. switch on the model
4. The red LED starts flashing and contious to do so until the center position has been measured.
5. If center point detection is not possible, the LED does not stop flashing. The zero point is not determined again until the receiver is switched on/off.
6. If the red LED is continuously on, the vehicle is ready to drive.

This automatic calibration is done in this way at **every** switch-on. I.e., the position detected at power-up is stored as the neutral position. This applies to both steering and speed.

4.2 Correct direction of travel

The direction of travel depends on the mechanical arrangement of the engines in the vehicle. Usually, the motors are mounted so that the motor shafts are in opposite directions. As a result, the motors must be connected with different polarity in order to drive in one direction.

Build the controller and steering servo into the model.

Test the steering direction of the servo. If it is not correct, correct it with the servo reverse setting on the transmitter. If the transmitter does not have this option, the servo must be built into the vehicle so that the direction is correct.

Now connect the motors. Apply forward throttle. If one of the motors does not turn in forward direction, reverse the polarity of this motor at the screw terminal. Now give throttle and at the same time punch in the steering. The motor in the chain inside the curve must slow down. If it does not,

change the two motor connection plugs.

5 Glossary of terms

BEC **B**attery **E**liminator **C**ircuit
This circuit replaces a extra Battery needed for the receiver and connected servos, by generating a fixed voltage from the drive battery.

ESC **E**lectronic **S**peed **C**ontroller
This is a unit to control the speed and direction of a DC motor.

LED **L**ight **E**mmitting **D**iode
A light-emitting diode (LED) is a semiconductor device that emits visible light when an electric current passes through it. Benefits of LEDs are low power requirement and long life. Disadvantages is the more complicated wiring, compared to a classic bulb, it has a polarity and a resistor is needed to limit the current.

Scalebus The Scalebus is a development of **SGS electronic** to connect controllers and modules to compose solutions for complex RC models.

SBus The Sbus has been introduced by **Futaba** to simplify the wiring between RC Receivers and servos / esc.

SBus The SBus was introduced by the company **Futaba** to simplify the wiring between receiver and servos/controllers. This is especially useful for models with many controllers.

IBus The IBus was introduced by the company **Flysky** to simplify the wiring between receiver and servos/controllers. This is especially useful for models with many controllers.

SUMD The SUMD sum signal has been introduced by the company **Graupner** to simplify the wiring between receiver and servos/controllers. This is especially useful for models with many controllers.

Abbre-vation	meaning	explanation
Stick	**S**tick	Stick not self centering
StickS	**S**tick **S**elfcentering	self centering Stick
TSMS	**T**hree **S**tage **M**omentary **S**witch	self centering momentary switch with three stages
TSS	**T**hree **S**tage **S**witch	switch with three stages
Pot	**Pot**entiometer	linear- or rotary knob
PotC	**Pot**entiometer with **C**enter key	linear- or rotary knob with a center key

Table 1: Abbrevation for the manipulators in the transmitter housing

6 Technische Daten

Nenn-Motorstrom	3 Ampere pro Motor
Versorgungsspannung	5,5 bis 12V
Nennstrom Lichtausgang	250mA
Zulässiger BEC Strom	500mA
PWM Frequenz	16kHz
Typische maximale Verlustleistung	1 Watt
Typischer Spannungsabfall in der Endstufe	0.5 Volt
Abmessungen ohne Steckverbinder	45x33x12mm
Abmessungen mit Steckverbinder	63x33x12mm
Softwareversion	0c.14.A2

7 Important

This equipment described above has been tested and inspected for quality and function. And it is intended for installation and use only as described above. This equipment does not contain any user serviceable parts. The supplier accepts no responsibility, financially or otherwise, for damages caused by use or misuse of the equipment described above. The equipment must be protected from exposure to water to prevent short circuit. Do not open the equipment or attempt to change function, wiring, or documentation in any way. Do not connect to incorrect voltage or reverse the battery polarity. Do not use in a careless or abusive fashion around persons or property. Do not attempt to repair. Any legitimate use, e.g. Installation in a model makes the user responsible to ensure that the operating instructions and non-liability agreement are provided to the purchaser of the module described above.

Do operate the device only in the permissible operating conditions. Do not make any changes to the controller through. The device shall not be exposed to splashing water or rain (causing a short circuit).

7.1 Warning

Due to choking hazard caused by small parts that may be swallowed, this product is not suitable for children under 6 years of age.

7.2 Environmental protection

For defective devices, repair is possible in many cases. Please contact us. If you do decide to dispose of the device, you will be making a contribution to environmental protection if you return the device to a municipal collection point for recycling. Electronic devices do not belong in household waste.

7.3 Address

SGS electronic
Zeppelinstraße 36
47638 Straelen
Germany / Europe

7.4 Contact

Web www.sgs-electronic.de
Email info@sgs-electronic.de

Ust-IdNr.: DE 249033623
WEEE-Reg.-Nr.: DE 90290947

7.5 Document date

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7.6 Documentation

We reserve the right to make updates, changes or additions to the information and data provided.

The documentation that accompanies your product applies.

Please note that documents obtained later via download may not correspond to the status of your module.