VT Sound and Lights Control

English

Instructions Manual V1.0

Sound and Lights Control Module

Model: VT SLC

Version: V1.0

Introduction

The VT-SLC is a programmable sound and light control module developed for scale RC truck models, based on TheDIYGuy999 project https://github.com/TheDIYGuy999. With this module you can find several engine sounds of different truck models, as well as realistic simulation of real sounds and lights. The pre-configured sound can be easily loaded into the module through our web software.

The module offers the major of sounds like engine with virtual vehicle inertia, synchronized to 3 speed transmission gearboxes, horns, brake sound, wizards, reverse, jake brake, etc. It includes the entire vehicle lighting, such as heads, fogs, reversing, signals, beacon simulation, cabin, brake, roof and side lights. The module is compatible with most remote systems, which use SBUS, IBUS, SUMD and PPM communication protocols.

Through the WIFI WEB application embedded in the module, you can configure various parameters, such as ESC power, light intensity, light modes, among others.

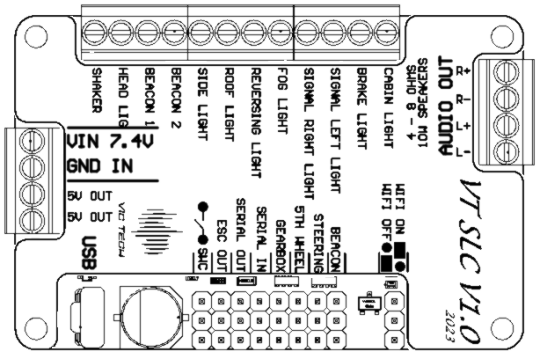
Safety notes:

- Please read this operating manual carefully and keep it for future use.
- Never connect or disconnect wires while the product is connected to a battery.
- The integrated circuits on the sound module are sensitive to electrostatic charge. Therefore, it is important that you don't touch these components.
- The sound module is not suitable for children under 14 years.

Technical data:

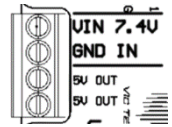
Voltages:	
Battery supply:	7 – 12.6 VDC (2S or 3S LiPo, 2S recommended)
Maximum from ESC:	6.5VDC
Output voltage:	5VDC for leds and shaker motor, **max. 2.5A total**
Power consumption:	
Standby current:	Approx: 100mA
Operation:	Depends on the volume and lights ON
Input signal types:	
Proportional:	PPM (1000 – 2000 ms)
Supported protocols:	I-BUS, SBUS, SUMD.
Outputs:	
Servo outputs:	5 outputs (1000 – 2000 ms). Beacons, Steering, 5th Wheel, Gearbox, ESC.
Signal outputs:	1 output (I-Bus, SBUS, SUMD or PPM)
Switching outputs:	12 outputs (negative switching with open collector system), current max. 300mA per output, total current of all outputs is not allowed to exceed 2.5A
Audio system:	
Amplifier:	20 W.
Loudspeakers:	1 or 2 speakers of 4 – 8 Ω (power W of the speaker depends on the supply voltage VIN)
Additional ports:	
Programming port:	Mini USB
Serial In port:	Servo type connector for signal from radio RX
Serial Out port:	Servo type connector for wireless trailer system
Another features:	
Protections:	Reverse power in Short circuit in 5VCD output
Working temperature:	0 – 60° C
Relative air humidity:	Max. 85%
Dimensions:	67 x 44 x 15 mm
Weight:	30 g

System Overview:

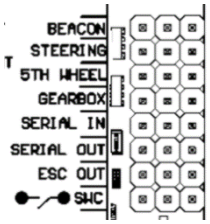


The module is divided into different stages:

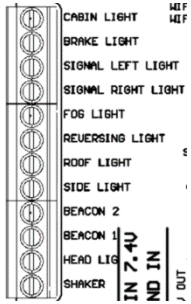
- Power Stage. Includes the DC power input (7 - 12.6 VDC) and the 5VDC outputs for the LEDs. The total current of both 5VDC is max. **2.5A.**



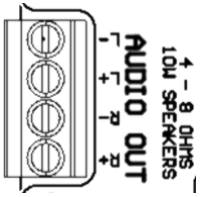
- Proportional and digital I/Os. This stage includes the 1000 to 2000 ms proportional outputs for beacon lights, steering, 5th wheel and gearbox servos, and digital ESC controller. There is also the Serial In digital input from the Rx radio receiver and the Serial Out digital output to connect the optional wireless trailer system. The SWC input is for connecting the Tamiya 5th wheel switch (is optional).



- Leds outputs. Here we have the PWM open collector leds outputs. Each output can drive until 300mA for a total of max. 2.5A on all outputs. **Very important use a series resistor (220 Ω) with each led**. This means that per each output we can have 20 leds but not exceed a total of 125 leds in all outputs. Shaker output is for drive a vibration DC motor (max. 500mA).



- Loudspeaker outputs. The on-system audio amplifier can drive 1 or 2 speakers of 4 – 8 Ω 10W speakers. **Take care with the speaker polarity**. The power and resistance of the speaker depends on the supply voltage of the module. We recommend for 2S VIN full range 4 - 8Ω 10W speakers.



- WIFI ON -OFF. With this jumper, you can turn ON or OFF the WIFI in the module to access the configuration through the WEB APP embedded in the module that will be described in detail later.

- The mini USB port, it for upload the pre-configured sounds in to the module through our web software, for them you need a mini USB cable and a PC with internet.

Installation:
For a safe installation of the sound and lights controller, we recommend using Velcro tape on the VT-LSC bottom cover.
Be careful not to connect components and conductor tracks with any metal parts, this may cause a short circuit, which destroys the module.

For connections, please refer to **wiring diagram**. Whenever you are making connections, do so with the battery disconnected.

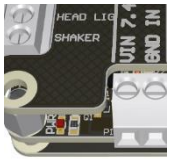
To connect the module, the following components are necessary:

- 2S or 3S LiPo battery, 2S recommended.
- Speed control ESC with internal UBEC 5 to 6.5V and 2A min. We recommended the Hobbywing QuicRun 1080 ESC.
- 1 to 2 4 – 8 Ω 10W loudspeakers.
- Wiring Leds with 220Ω series resistor.
- 24 to 28 AWG cable for LEDs wiring.
- 10 channels radio controller. The receiver Rx must have digital output I-BUS, SBUS, SUMD or PPM. We recommended install the self-centering throttle spring to the radio controller.

Connection of power supplies:
The module is designed to be powered from two power sources.

The first, is the main power supply **VIN - GND** terminals, where a DC voltage of 7 - 12.6V is connected (2S - 3S LiPo battery), we recommend using a 2S battery. This battery can be the main battery of the truck. This power supply provides power to the audio amplifier and the light outputs.

The second power supply input, **ESC OUT** connector, takes the voltage coming from the UBEC of the ESC (speed control) and is responsible for supplying energy to the digital components of the module, the Rx radio receiver and the different servos connected to the module. This voltage must be 5 – 6.5VDC. The PWR led into the module, The PWR LED on the module indicates that the digital part of the system is energized, so this LED will only light when the ESC is connected to the module and the ESC is turned on.



Connection of loudspeakers
The red cable is connected to the positive and the black to the negative pole of the loudspeakers output, be careful with this.

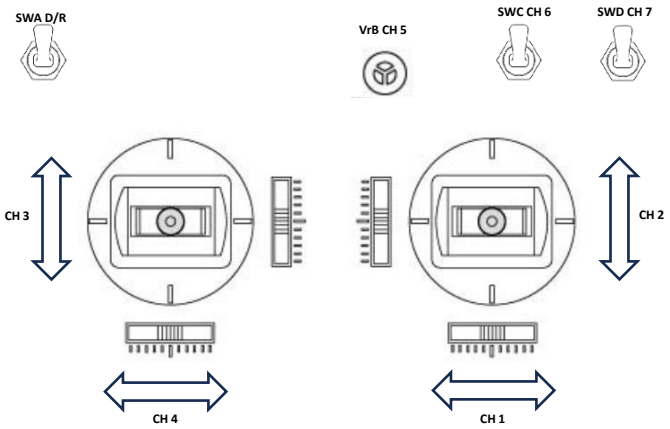
Radio receiver Rx connection
The Rx is connected to **SERIAL IN** with the supplied female to female servo cable.

Proportional outputs connections
Connect to these outputs the steering, 5th wheel and gearbox servos, and digital speed control ESC. Here you can connect a RC controlled rotary beacons, each one has assigned output. All servos and rotary beacons are powered by the UBEC of the ESC controller. If you use digital servos be careful with the power of the UBEC. If the power of the UBEC of the ESC is not sufficient, the module will malfunction, and a higher power UBEC will have to be used.

Connection of leds outputs
Connect the truck leds to these outputs, depending on the function, each led or group of leds has its assigned output. The VT-LSC is always switching the negative pole to each output and thus to the connected load. The negative pole is always connected to the load (see wiring diagram). The positive pole of each led must be connected to one of the 5VDC outputs.

The switched voltage at the outputs (with 100% intensity) is always as high, 5VDC. For this reason, a resistor of 220Ω must be placed in series with each LED. The % of intensity of the leds can be changed through the WIFI WEB APP embedded in the module.

Radio configuration:
For the radio setup, the module uses the remote 1 - 7 channels, with the following assignment (refer to the following images and table) in radio mode 2 configuration (aileron (roll) and elevator (pitch) with the right hand, while the rudder (yaw) and throttle are controlled by the left hand):



Sticks, Switches, Potentiometer				Function	
Remote channel	Name	Direction	Duration	Switch A up (100% DR)	Switch A down (75% DR)
1	Stick horizontal right			Steering	
6	Switch C (3 pos.)			Gearbox shifting	
3	Stick vertical left			Throttle & brake	
5	Pot B "VrB"			Horn, bluelight & siren / trailer legs / trailer ramps	
2	Stick vertical right	up	toggle long	High / low beam	light state up
			toggle momentary	Headlights flasher	
		down	togggle long	volume	Engine on / off
			toggle momentary	Jakebrake	
4	Stick horizontal left	left	togggle long		hazards
			toggle momentary	left indicator on / off	
		right	togggle long		5th wheel unlocking
			toggle momentary	right indicator on / off	
7	Switch D			Transmission neutral	

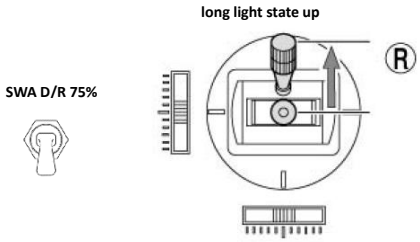
D/R = Dual Rate (signal range, 100% = 1000 - 2000ms, 75% = 1125 - 1875ms)
Switch A is transmitter internally used for DR switching: CH2 & 4 "Normal" = 100, "Sport" = 75.

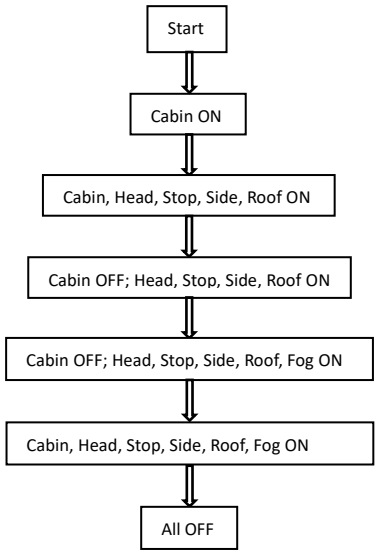
In addition to assigning channels to the radio, it is very important to configure what is known as dual rates D/R in some radios or conditions in others, to channels 2 and 4, where with SWA up the output proportional signals on channels 2 and 4 are 100% (1000 - 2000 ms) and SWA down the signal is 75% (1125 - 1875 ms).

For a better understanding, look at the example guides for various radios that we have on our WEB page.

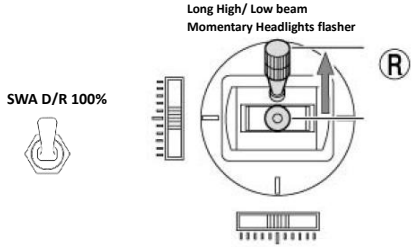
Function sequences:
All functions that can be triggered with the sound module can be compiled to a special function sequence with defined order and time for each step.

Lights sequences:
To start the light sequence, the dual rate SWA must be down D/R 75% and the right horizontal stick must be brought up and held for a second and returned to the center and repeat until all the lights turn on. After having all the lights on, in the next sequence they will all turn off.

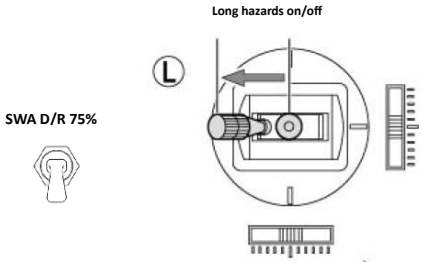




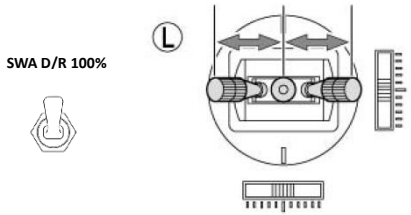
For flashing lights, use the vertical right stick up momentarily, or long for high/low beams, with D/R 100.%.



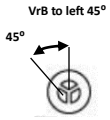
To turn the hazard lights on/off, use the horizontal left stick to the left long with D/R 75%.



For signals indicators on/off, use the horizontal left stick to the left or right momentary with D/R 100%.

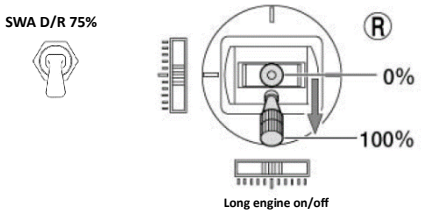


The Rotary beacon and leds beacon 1 and 2, you can them turn on carrying VrB to the left 45º.

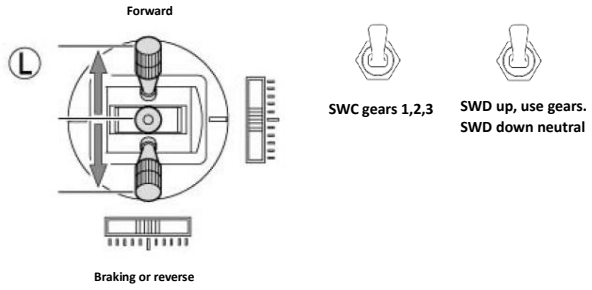


Engine on/off, throttle, braking, gears sequences:

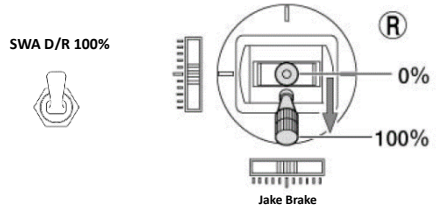
To start or stop the engine, use the vertical right stick down long with D/R 75%.



To accelerate, the engine must be on. To move forward or in reverse, move the vertical left stick with SWD up, since with SWD down the vehicle will be in neutral. Use the SWC to enter the desired gear.

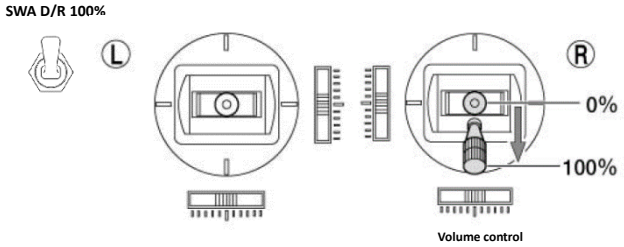


To activate the jake brake, use the vertical right stick down with D/R 100%. The vehicle must be moving and accelerating for the jake brake to work.



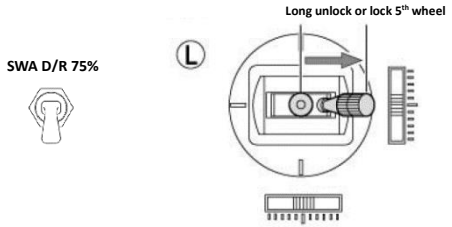
System Volume control

The system volume is digital. It starts with volume to 100%. To decrease the volume, move the vertical right stick down long with D/R 100%. For the volume change to be effective, the vehicle must not be accelerating as the jake brake will be activated.



Fifth wheel servo

To unlock or lock the fifth wheel, use the horizontal left stick to the right and hold it long with D/R 75%. When the fifth wheel is unlocked, the hazard lights will activate.



Main horn and second horn:

The horns are activated with the VrB knob, turning it all the way to the right for the main horn, or all the way to the left for the secondary horn. If you have the hazard lights activated or the 5th wheel is unlocked, the horns will not activate.

WiFi configuration via 192.168.4.1:

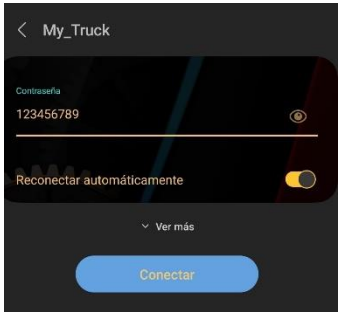
The VT-LSC V1.0 module allows you to configure various parameters through an embedded web application. This is possible since the VT-SLC opens a WIFI network that you can access and when you are in it, through your browser, enter http://192.162.4.1 and you will access the application to configure your module.

Network access:

First you must turn on the WIFI with the WIFI ON-OFF jumper. For it to take effect either turning WIFI on or off, you must do this with the module off, since it turns WIFI on or off when it is initialized. With

WIFI on you can hear some noise from the speakers, this is normal. To avoid this noise, it is recommended to keep the WIFI off.

You can access the WIFI network form a Cell, Tablet or PC. Look for the My_Truck WIFI network and access it with the password 123456789.

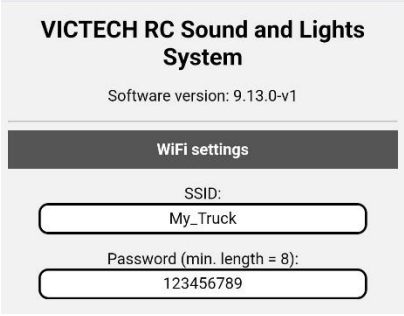


Then access your web browser and type the url http://192.162.4.1.

Now you can config your VT-SLC module.

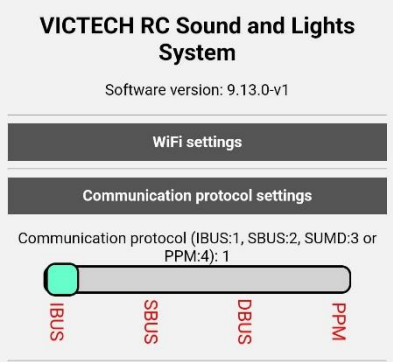
WIFI settings:

Here you can change the SSID name and password of the WIFI network of the module. We recommend changing the SSID name, because by default all our modules have the same name. For example, “Vics_Hauler”.



Communications protocol settings:

Select here the protocol (i-BUS, SBUS, SUMD or PPM) that you are going to use in your Rx radio receiver using the slider. If you have selected a different protocol than the Rx, the module will not work.



ESC setting:

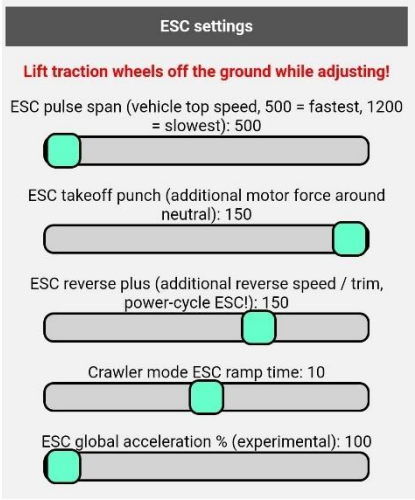
In ESC settings you can modify certain parameters were depending on the ESC-Motor-Gearbox combination, you can give or remove power at different times.

ESC pulse span on 500, the motor will deliver maximum power at full acceleration, while at 1200 it will have less power.

ESC takeoff, modifies the additional motor force around neutral.

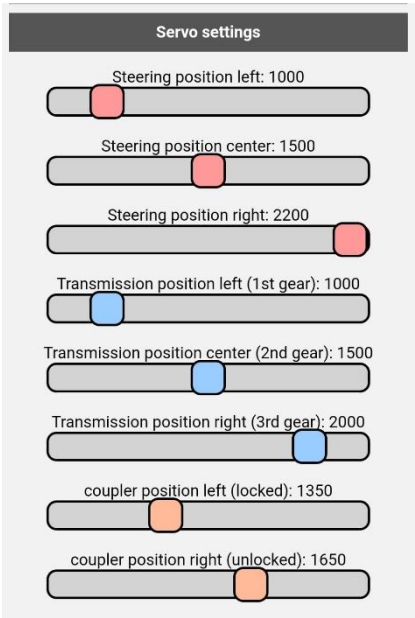
ESC reverse plus, with this parameter you can give additional reverse speed

With Crawler mode ESC ramp time and ESC global acceleration %, You can change the general acceleration curve.



Servo setting:

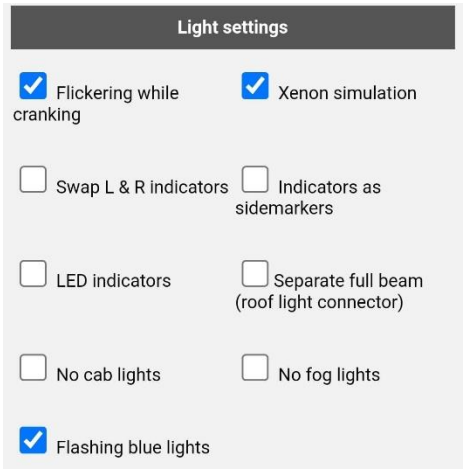
These are important parameters for tuning the truck's servos. Here you can modify the max and min travels of the steering servos, gearbox and 5th wheel.



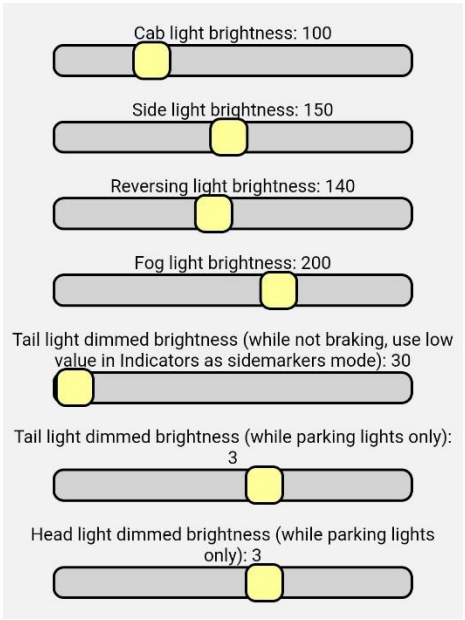
Light settings:

Here you can setup different light modes and change the brightness of the lights.

- Flickering while cranking, the lights will flicker a bit during engine cranking, otherwise they are just a bit dimmed.
- Xenon simulation, headlights would show a xenon bulb ignition flash, if it selected.
- Swap L & R indicators, select ff you want to swap L & R indicators.
- Indicators as sidemarkets, the indicators are used as side markers as well. This is commonly used in US trucks.
- Led indicators, indicators are switching "hard" (without fading like an incandescent bulb), if it selected (was LED_INDICATORS).
- Separate full beam (roof light connector), the full beam is a separate bulb, connected to roof lights pin. Connect roof lights to side lights in this case.
- No cab and fog lights, the cabin and fog lights step in the lights sequence are skipped.
- Flashing blue lights, the beacons lights are double flash blue lights if is selected or "rotating" beacons if it unselected.



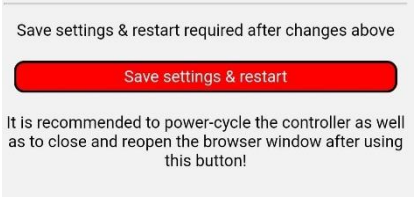
You can also adjust the brightness of the lights.

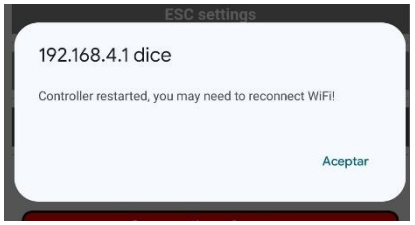


Save settings and restart:

All changes except WIFI and communications protocols settings will be made immediately when you make them, but if you want to save them in the module you must press the save settings and restart.

When you do, the module will restart, and your changes will be saved.



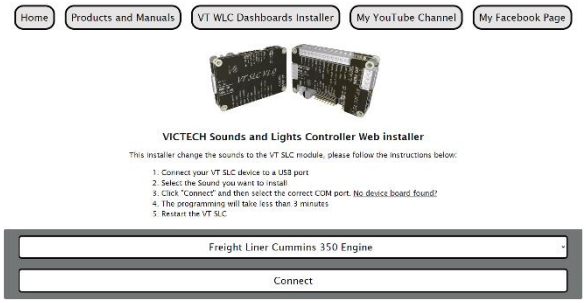


Upload preset sounds to the VT-LSC module:

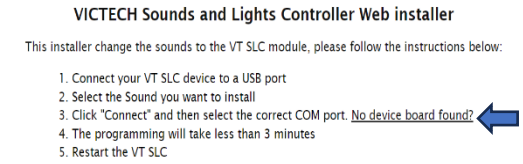
Changing the sounds that we have pre-established for the VT-LSC module is done through our WEB software, which you will find in one of the tabs on our VIC TECH website. For them you must have a mini USB cable and a PC with internet.

First, connect the module to the PC with the cable, it is not necessary to power the VT-LSC module, since it is powered by USB. The USB only powers the part of the module necessary to carry out the update.

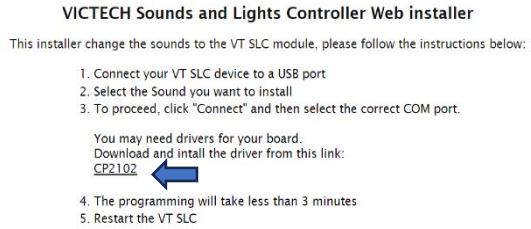
Select VT SLC WEB sounds installer:



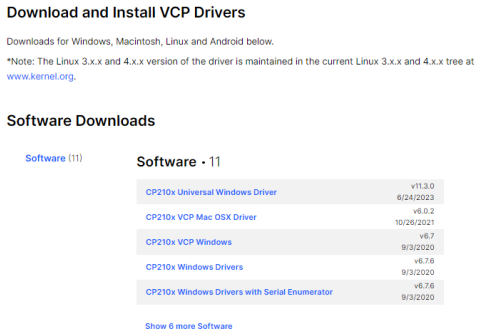
If is your first time, you need install the USB module drives.



Click in “No device board found” and next in CP2102.

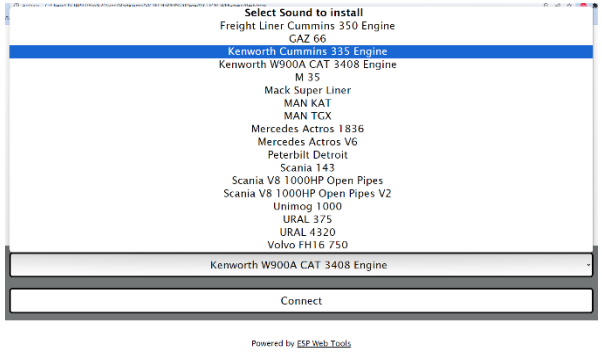


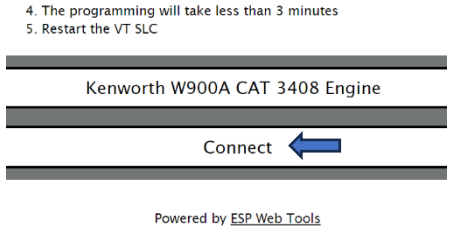
This link will take you to the manufacturer's download section. Download and install CP210x VCP windows drivers.



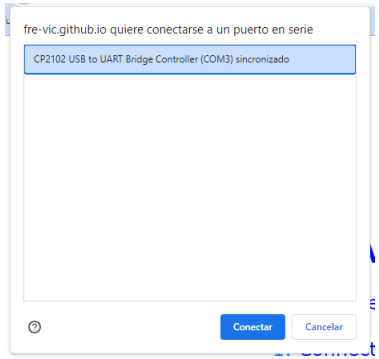
Now you can install the sounds to your module.

Select the sound you want to install and then click connect.

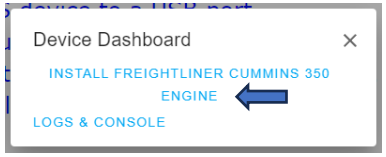




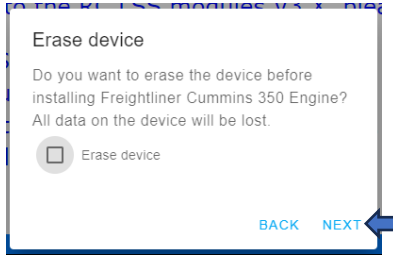
A window should be displayed where the COM port where the module is located appears. Select the port and click connect. If for some reason the port does not appear or an error window appears, verify that the USB cable is properly connected, the drivers installed and restart the browser.



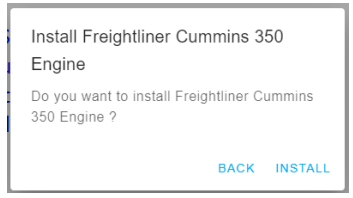
Now click on install the sound you chose.

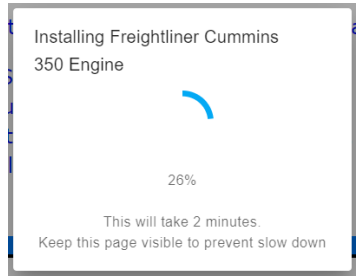


If you want to erase all the parameters of the module, select Erase device (this is useful if you lost, for example, the WIFI network password or if you want to put all the parameters that come by default), otherwise do not choose it, click next.

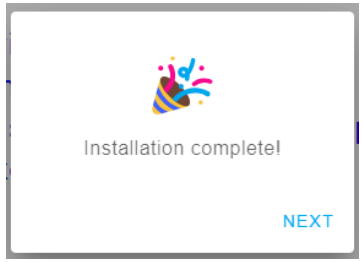


Now click on "Install" and it will begin to install the module. Do not refresh or close the browser at this point. If at any time it gets stuck or an error appears, check the USB cable and restart the browser.





Wait until the installation complete pop-up window appears. Now your module is updated.



Troubleshooting:

Trouble(s):	Possible Causes	Solution
The module does not respond to any radio command.	No power was supplied to the ESC.	Check all ESC and battery connections, battery voltage level.
	The ESC is OFF.	Turn ON the ESC.
	Problem with the radio system.	Check the radio system.
ESC ON and radio ON but the module does not respond to any radio command. Hazard lights and rotate beacon ON.	Radio receiver Rx is not binding.	Binding the RC Rx with the radio system.
	RC Rx connected incorrectly.	Check the connections between the RC Rx and module.
	Different protocol between the RC Rx and the one configured in the module.	In the module, through the WIFI configuration application, select the correct protocol between i-BUS, SBUS, SUMD or PPM.
Everything works except the sound.	Loudspeaker damage or bad connection.	Check the loudspeakers and their connections.
Not sound and not lights. Servos works and truck moves.	Bad connections in the main power IN.	Check the main battery power IN connections.
The module suddenly stopped, or it restarts constantly.	Low battery level.	Check the voltage battery level.
	If you use digital servos, the current supplied by the ESC's BEC may not be enough.	Change the ESC or Power the servos with a separate BEC.

Thank you very much for trusting in Vic Tech and purchasing our products. For more information visit our WEB page as well as our social networks.

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