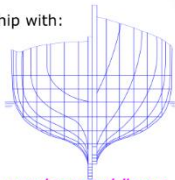


SEAWORKS CLIM

VSP Ring limiter

In partnership with:



www.bauer-modelle.com



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Introduction

The main purpose of a ring limiter is to protect Voith-Schneider Propellers and their servos. In addition to this the CLIM (C-Limiter, C like the programming language that's used to power it) also integrates some useful extras:

- Easy configuration with no software required
- Precise VSP center adjustment
- Custom ring radius adjustment
- Mapping of the radio stick radius to the ring radius (allows a more precise control of the vessel)
- Radio brand/function agnostic, get the full VSP experience with even the most basic Radio transmitter.

Technical specifications

Supply Voltage (U_b):	5-8V
Power consumption:	Standby current approx. 20 mA
Proportional inputs:	4 inputs (X1-X4) • PWM (1000 - 2000 us)
Servo outputs:	4 outputs (X12-X15) • PWM (1000 - 2000 us)
Additional ports:	BEC 5-8V power input (X0)
Protection features:	• Short circuit protection over BEC • Failsafe for proportional inputs (1500us)
CPU:	32Mhz Harvard architecture
Operating temperature range:	0 – 60° C
Maximal relative air humidity:	Max. 85 %
Dimensions:	56 x 48 x 13 mm

Requirements

The ring limiter works in a range from 5 V to 8 V. The idle current consumption is around 20mA.

The ring limiter can be powered via ports X1-X4, X12-X15 and the X0 port (BEC).

Usually, the current provided by an ESC should be sufficient.

Passing the current through the receiver is at your own risk.

There is a risk of current peaks burning out the receiver, especially older ones!

For the power supply, preferably use a 4-5A BEC, which is connected to port X0.

The ring limiter has a dedicated 5V rail to handle those spikes.

Control of the model with two VSP

A 5-channel transmitter/receiver set is required with both sticks self-neutralizing to return to center.

The 5th channel is required for the speed control of the motors. Possibly you need a Y-cable to get the proportional signals for the motor ESCs split up.

Control of the model with one VSP

A simple 3-4 channel transmitter/receiver set is required, with one self-neutralizing return-to-centre stick. It is used to control the servos of the VSP. With the other stick, which is usually not self-neutralizing, the speed controller of the engine can be controlled.

Configuration

Adjust the center of the VSP control lever mechanically according to the VSP manual with the centering bush.

Ring limiter settings

- **Center the VSP**

1. Put the jumper on port X10. The system will emit 2 long beeps.
2. Use the joysticks to center each VSP.
3. Remove the jumper. The settings are saved.
The system will emit 1 long beep.

You can also adjust the center in the water with the motor turning slowly. The model should not move forwards, backwards or sideways when it is in the exact center.

Ring limiter settings

- **Define radius**

For easy adjustments, run the engine slowly

1. Put the jumper on port X11. The system will emit 3 long beeps.
2. Set channel 1 on the transmitter to the maximum permissible radius. The VSP gives visual feedback on the X-axis.

If the control stick hits the support tube, the screw on the control lever of the VSP begins to turn.

The screw on the VSP control stick should not turn. Take the settings back a bit.

3. Remove the jumper. The settings are saved.
The system will emit 1 long beep.

Ring limiter settings

- **Reset the Ring limiter**

1. Turn off the power supply of the limiter.
2. Put jumpers on both ports X10 & X11.
3. Turn the power on, the system will emit 4 long beeps.
4. Turn the system off again and remove the jumpers.

The system is now reset to factory settings.

Don't leave the Jumpers on ports X10 and X11 while not performing the configurations above (calibration, radius, reset). In order for the module to work properly, those ports must be free (not bridged).

Legal

Terms of use

This product is offered to you conditioned upon your acceptance without modification of the terms, conditions, and notices contained.

Exclusive Obligation

This product has been designed for the specific use of applications. This product may not be used for unlawful purposes and that use is expressly prohibited under the terms and conditions. This product may not be used in critical environments.

Please read this operating manual carefully and keep it for future use!

- The integrated circuits of the module are sensitive to electrostatic charge. Therefore it is important that you don't touch these components, before discharging yourself (e.g. through a grip onto a grounded device).
- Under certain circumstances unfavorable placement and wiring of the module in the model may lead to restriction of transmitter range (mainly with 35-40 MHz transmitter).
- The module should only be used with supply voltages indicated in the technical data.
- Always switch off power first before connecting the module!
- The module is not suitable for children under 14 years.

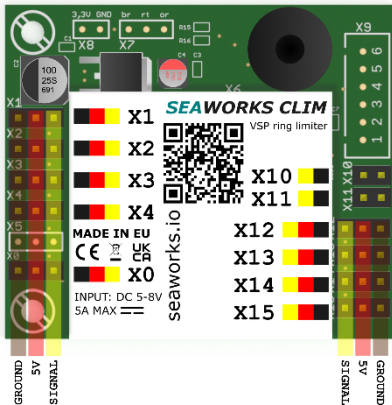
FAQ / Troubleshooting

At the first start-up nothing happens	<p>-Double check the wiring, it should be like shown in the supplement drawing. The wiring is suited for standard mode 2 transmitter with both return-to-center sticks. Other configurations may require more trial & test to properly configure them.</p> <p>-Make sure the transmitter has no PWM range limitation active (e.g. Graupner). In order to work correctly, the limiter needs an input range from 1000us to 2000us.</p>
The limiter works normally but doesn't move at all during calibration	<p>During the calibration process the limiter needs an input range of 1000us to 2000us. Make sure to disable any limitations in the transmitter.</p>

<p>After calibrating the radius, the servos don't move</p>	<p>In order to successfully calibrate all channels, the receiver needs to output the full range of PWM signals from 1000us to 2000us. To return to a default state use the jumpers like illustrated on page 9.</p>
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Beep code table

2 short at startup	Startup successful
Long persistent	Generic error, wrong polarity?
2 long	VSP center calibration mode
3 long	Limiter radius calibration mode
4 long	Reset successful



Reversing the polarity while connecting power to the ports will cause irreparable damage to the module!

Always check the wiring carefully. In particular, high currents provided by Li-Po/Li-Ion batteries can easily burn down the ring limiter when plugged with the wrong polarity.

We take no responsibility for damage caused by wrong wiring.



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