

# servonaut

## M25

### Fahrtregler mit Lichtanlage Speed controller with lighting system

#### Fahrtregler/ESC:

16kHz, 20A/3min, Anfahrhilfe, übergangslose EMK-Bremse, 5A S-BEC

#### 20 Schaltausgänge für Licht

#### 20 switching outputs

M25 und 2 Ausgänge für Zubehör über optionalen Schiebeschalter zentral an-/abschaltbar

*M25 and 2 accessory outputs can be switched on and off centrally via an optional slide switch*

#### Ansteuerung:

Einfach über 3 oder 4 Fernsteuerkanäle, wahlweise auch über Multikanal (Nautic) oder S-Bus.

#### Control:

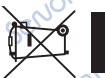
*Via 3 or 4 servo channels, optional via multi-channel (Nautic) or S-Bus.*

#### Verwendung:

Als Fahrtregler-Lichtanlagenkombination für Modelle im Maßstab 1:24 bis 1:8. Für einzelne LED's oder Beleuchtungsplatten. IR-Übertragung zum Auflieger ist vorbereitet.

#### Application:

*As speed controller-lighting system combination for models in scale 1:24 to 1:8. For LED's or lighting circuit boards. Prepared for infrared transmission to the trailer.*





### **Please note:**

The M25 can be operated in two different modes. Depending on whether you are driving with or without “cruise control,” the “Fail-Safe” position for the drive channel must be set correctly on the radio, if necessary. Otherwise, there is a risk that the model will start or continue driving uncontrollably in the event of reception interference. With Servonaut radios, the M25 automatically stops the model in both operating modes in the event of a loss of reception.

The M25 is factory-set to automatic battery detection. The low-voltage cutoff (battery protection) automatically adjusts to the standard battery voltages of NiMH 7.2V (Lipo 7.4V) or NiMH 12V (Lipo 11.1V).

For different battery voltages or battery types, the low-voltage cutoff can be adjusted on the module or using a Servonaut DICA or a Servonaut radio.

The M25 is factory-set to cruise control; you need at least two channels (ESC+F1) to drive. You can disable cruise control on the module or via a DiCa or a Servonaut radio HS12/HS16.

The light outputs switch to negative as usual; the output voltage for the LEDs or incandescent bulbs is equal to the drive battery voltage



### **Safety instructions**

Never connect the battery with reversed polarity. Avoid short circuits

Protect the module from water and oil

Disconnect the battery from the system during extended breaks and overnight. This is especially important for LiPo batteries!

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ENGLISH

## Scope of delivery

- M25 module
- Programming button with cable
- Five servo patch cables for connecting to the receiver

## Technical Specifications

- Speed controller and lighting system combination for all 1:8 to 1:24 scale models.
- Built-in IR transmitter.
- Compatible with common RC radio systems with or without Multibus or S-Bus.
- Compatible with many common lighting boards or individual LEDs.
- Not compatible with lighting boards from bus systems.
- Easy connection, all outputs available on screw terminals and color-coded.
- Adjustable light bulb simulation or xenon effect
- Daytime running light, fog lights, parking lights, low beam, high beam and headlight flash.
- Indicators and hazard lights, cornering lights
- Two outputs with various front flasher modes.

- Two universal extra outputs for e.g., rotating beacons.
- 2 servo inputs S5 / S6 for direct transmission to the trailer.
- Built-in decoder, compatible with Nautic, Multiswitch, and Multibus.
- S-Bus compatible with teach-in without a CARD or computer.
- All settings can also be adjusted directly on the module.
- 16 outputs 80mA, short-circuit-protected, overload-protected, professional terminals.
- 4 outputs 700mA, short-circuit-protected, overload-protected, for front flashers and accessories such as rotating beacons.
- 2 sockets for accessories for up to 7A
- For battery voltages 7.2 to 16V
- Dimensions approx. 65 x 60 x 20 mm<sup>3</sup>.
- IR-SET with diode and patch cable available as an accessory.
- Schalt-AN/AUS external on/off switch available as an accessory.

## Features

- The M25 offers the typical Servonaut driving behavior with cruise control for smooth, quiet operation and extremely responsive maneuvering (cruise control can also be turned off).
- The M25 offers the driving characteristics of a **3- or 4-speed manual transmission with automatic shifting** for all truck and construction machinery models equipped with Servonaut underfloor drives from the GM32 and GM42 series. The shifting process is electronically simulated; combined with a Servonaut sound module, this creates an extremely realistic driving experience (this transmission simulation can also be turned off).
- Compatible with standard lighting boards, e.g., from Servonaut, that are designed for your battery voltage.
- Compatible with LEDs with series resistors if no suitable boards are available (e.g., Servonaut LEDSET range).
- Very easy connection to your system; many things are detected automatically.

- You need four switches or push buttons with three positions each on the transmitter. Alternatively, you can also use the control sticks or combine one channel of the stick (preferably left/right for the indicators) with switches or push buttons having three positions.

## Let's get started

Setup and testing are easier if you have already connected LED boards, incandescent bulbs, or individual LEDs. Then you can immediately see if the M25 is connected correctly and how the M25 works.

## Easy connection via four channels



Caution: Jack up the model to prevent it from moving unintentionally.

You need four of the included servo patch cables.

- Connect the “ESC” input of the M25 to the receiver channel for “Drive.”
- Connect the F1 input to the channel on the receiver that you want to use to control the indicators and parking lights resp. low beams (see page 40 for assignments). In cruise con-

trol mode, this channel is also used to switch between forward and reverse—see diagram on page 38.

If you are already familiar with Servonaut systems (e.g., LA10, M24, ML4, LA6), you will likely connect input F1 to a left/right stick channel. In that case, operation is as usual.

- Connect input F2 to the channel on the receiver that you want to use to control high beams/headlight flash, as well as fog lights and rear fog lights.
- Connect input F3 to the channel on the receiver that you want to use to control daytime running lights, front flashers, and the extra outputs. If you do not connect this channel, the outputs will be controlled together with the parking lights.
- The M25 automatically detects this connection configuration. You can test everything immediately. After powering on, the M25 displays “=Prop”.
- If the right and left indicators are reversed, it is best to use the “Servo Reverse” function on the transmitter or, if necessary, simply swap the cables at the M25 connections for the indicators.

- Two servo signals can be transmitted via inputs S5 and S6 in addition to the trailer or semi-trailer servo 5 and servo 6. The Servonaut IR-SET, which includes a matching IR LED and a patch cable, is available as an accessory.

## Connection to the Multi-Bus

The Multiswitch/Multiprop and Nautic systems were originally developed by Robbe™ and Graupner™ specifically for functional model building as channel extensions. This allows eight additional sub-channels to be transmitted sequentially via a single multi-channel. We have further developed this method for the Servonaut Multi-Bus.

Please first thoroughly familiarize yourself with your remote control; consult the user manual. You must clarify the following points:

- Does your remote control (both transmitter and receiver) support any of the mentioned multi-channel systems at all?
- How is the multi-channel system activated? On the Servonaut transmitter, we recommend the “Robbe™” setting.

- On which channel does the signal come out? Channel 7 or 8 are common. You can find and check the channel using an analog servo: The servo will vibrate violently on the multichannel.

Only when these points have been clarified can you proceed.



Caution: Jack up the model to prevent it from moving unintentionally.

- Connect the “ESC” input of the M25 to the receiver channel for “Drive.”
- Connect the F1 input of the M25 to the multi-channel on the receiver; for Servonaut, this is channel 7 or 8.
- For daytime running lights, front flashers, and the extra outputs, you can also connect channel F3 to the receiver. If you do not connect this channel, the outputs will be switched together with the parking lights.
- Now turn on your system and the model. Wait a moment. The M25 automatically detects these systems. After powering on, the M25 displays “=Multi”.

- Subchannels a through h are automatically assigned to the lighting functions according to the Servonaut standard; see the tables on pages 43 and 44.
- With Servonaut transmitters or similarly flexible systems, you can now assign the desired switches or buttons to subchannels a through h and test everything immediately. For Servonaut transmitters, there is a “MultibusEN” template available for this purpose.
- If you connect a Servonaut SM7 sound module to the multichannel using a Y-cable, you can also control the sound functions via the multichannel.
- Via inputs S5 and S6, two servo signals can be transmitted directly to the semi-trailer or trailer servo 5 and servo 6. The Servonaut IR-SET, which includes a matching IR LED and a patch cable, is available as an accessory for this purpose.

## Connection to the S-Bus

The S-Bus was originally developed by Futaba™ for model aircraft. It transmits up to 16 channels via a single cable. The S-Bus does not increase the number of channels—an 8-channel

transmitter transmits only 8 channels via the S-Bus as well.

Please first thoroughly familiarize yourself with your remote control; consult the user manual. We recommend the S-Bus only for advanced model builders. You must clarify the following points:

- Does your remote control (both transmitter and receiver) support the S-Bus at all?
- How is the S-Bus activated on the transmitter and receiver, and where does the signal come out on the receiver?
- Are the sticks and switches already permanently assigned to channels, or do you first need to assign the sticks and switches yourself?
- Do you want to transmit one or two additional channels to the trailer?

Only once these points have been clarified can you proceed.



Caution: Jack up the model to prevent it from moving unintentionally.

- Connect the "ESC" input of the M25 to the receiver channel for "Drive." For safety reasons, the drive chan-

nel on the M25 can not be operated via the S-Bus.

- Set the sticks or switches you want to use to the center position.
- Connect the F1 input of the M25 to the S-Bus output on the receiver.
- To program the channels from the S-Bus, plug the programming button into the M25, press the button, and hold it in this position. Now turn on your transmitter and the model. Wait a moment. The M25 automatically detects the S-Bus. The M25 displays "->" and you can release the button.
- The M25 is now in programming mode. By briefly pressing the button, you can select the "S-Bus" menu item. Pressing and holding the button then starts the learning process.
- The M25 displays "?F1" and waits.
- If the M25 displays "=?" instead the S-Bus could not be detected. Please check your settings on the remote control and the receiver.
- Now operate the stick or switch you want to use for the indicators and parking/driving lights, as if you were indicating left.
- The M25 displays "?F2" and waits.

- Now move the stick or switch you want to use for high beams and fog lights once in the direction of high beams.
- The M25 displays “?F3” and waits.
- Now move the stick or switch you want to use for daytime running lights, front flashers, and the extra outputs once in the direction of daytime running lights.
- The M25 displays “?LE” and waits.
- Now move the stick for the steering channel as if you were turning left.
- The M25 displays “?S5” and waits.
- If you do not want to transfer any servo channels to the trailer, you can now end the programming by holding the button down, and you are done. The M25 will then display “OK”.
- Or you can move the stick or switch in the direction you want to assign to Servo 5 on the trailer module. This direction also determines the future rotation direction of the servo!
- The M25 displays “?S6” and waits.
- If you do not want to transfer any further channels to the trailer, you can end the programming by holding down the button. The M25 will then display “OK”
- Or you can move the stick or switch in a direction that should be transferred to the trailer module as Servo6. The direction also determines the future rotation direction of the servo!
- The M25 displays “OK,” the programming is complete, and the M25 switches to normal operating mode.
- If the setting did not work, please check on the transmitter to see if the switches used are assigned to a channel at all. You can change or repeat the setting as often as you like.
- You press the button any time before the S5 step to cancel the teach-in. The M25 displays “XX” in this case.

## Switching Outputs

The switching outputs for front flashers, extra1, and extra2 are universal and suitable for incandescent bulbs, LEDs, and accessories such as rotating beacons. Series resistors are absolutely necessary for LEDs.

With incandescent bulbs, the voltage must match. For a 7.2V battery, 6V bulbs should be used; for a 12V battery, 12V bulbs should be used.



Tip: Instead of a 12V bulb, you can also connect two 6V bulbs of the same type in series.

The remaining switching outputs are specifically designed for LEDs and lighting boards. Series resistors are absolutely necessary for LEDs. 12V incandescent bulbs can also be used at the outputs, but the current draw must not exceed 80mA.

All switching outputs at the screw terminals switch to ground or the battery's negative terminal. The lights must therefore be connected between the respective output and the screw terminal marked "+".


## Operating the speed controller

If you want to use the M25 as a standard forward-reverse controller, you can disable the cruise control function via the settings menu.

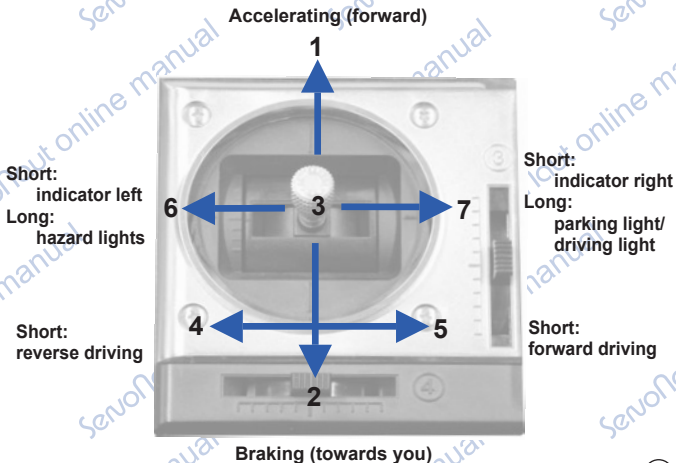
You can then use the M25's drive channel with a joystick to move forward and backward, just like with a conventional speed controller.

## In cruise control mode, the M25 functions very differently from conventional speed controllers!

- In cruise control mode, you must connect at least channel F1 in addition to the drive channel. If you are not using a Multibus, you should assign this channel on the transmitter to the left-right movement of the throttle stick.
- To accelerate, move the cross-stick forward, even when driving in reverse! - see diagram on the following page (1)
- To brake, move the stick backward; the brake light illuminates (2)
- Throttle stick in neutral position = model continues at a constant speed (3)
- To drive in reverse, move the throttle stick down (brake) (2) and only then move briefly to the left (4)
- Reverse lights come on - to accelerate, move the throttle stick forward! (1)
- To shift into forward gear with the brake fully engaged, move the stick down (2) and only then move briefly to the right (5)

- 
 For remote controls with a fail-safe function (modern 2.4 GHz and PCM systems), the fail-safe function for the throttle channel must be programmed to full brake (thumbstick all the way down) (2)

## Operating with joystick in cruise control mode




## Operation via four channels (also via S-Bus)

Use the ESC to control the speed controller (even when controlling lighting functions via S-Bus).

Via F1 or the first programmed channel on the S-Bus, you control the indicators, hazard lights, parking lights, and low beams, as is standard with Servonaut:

- A short press of the joystick (from the center position) or the switch to the left or right turns the turn signals on and off.
- A long press to the left turns on the hazard lights.
- A long press to the right turns on the parking lights and headlights. After approximately 1 second, the parking lights turn on first, followed by the parking lights and headlights together. Pressing and holding again turns off the parking lights and headlights.

 **Tip:** If pressing the stick to the left accidentally activates the right turn signal, adjust the corresponding channel in the transmitter (Servo Reverse or Reverse). If your system does

not support this function, you can swap the indicators connections on the M25 if necessary. However, this will also swap the positions of the hazard lights and lighting functions from left to right.

Use F2 or the second programmed channel on the S-Bus to control high beams, headlight flash, and fog lights, as well as Servo 3 on the AMO trailer electronics:

- A short press to the left activates the headlight flash or turns off the high beam.
- A long press to the left turns the high beam on and off.
- A long press with a half-stroke to the left activates Servo 3 on the AMO.
- A short press to the right turns the front fog lights on and off.
- A long press to the right turns the rear fog light and the SF6 output on an AMO or AM6 trailer control unit on or off.
- Pressing and holding the button halfway to the right activates Servo 3 on the AMO. You can achieve half-way movements on a channel using a pushbutton or switch via a mixing function. To do this, simply

mix another pushbutton at 50% on-  
to the channel.

Using F3 or the third programmed channel on the S-Bus, you can control the daytime running lights, front flashers, extra 1 and extra 2, as well as the fifth wheel servo output and Servo 4 on the AMO trailer control unit:

- A short press to the left turns the front flashers on or off.
- A long press to the left turns the daytime running lights on or off.

- A long press with a half-stroke to the left activates the fifth-wheel servo as well as servo 4 on the AMO.
- A short press to the right turns the extra 1 output on or off.
- A long press to the right turns the extra 2 output on or off.
- Pressing and holding the button halfway to the right activates the fifth wheel servo and servo 4 on the AMO.

Input	left		right	
	long	short	short	long
F1	hazard lights	indicator left	indicator right	parking lights/ low beam
F2	high beam	head light flash	fog lights	rear fog light / AMO SF6
F3	daytime run- ning lights	flasher	extra 1	extra 2

Input	long half left	long half right
F1		
F2	AMO servo3	AMO servo3
F3	5th wheel / AMO servo 4	5th wheel / AMO servo 4

## Operation via a multichannel

The assignment of the subchannels on the multichannel has been chosen so that, when connecting the SM7 and M25 together for (older) Robbe™ or Graupner™ transmitters, the switch assignments on the transmitter are logical; see the tables on page 43 and 44. With Servonaut transmitters, however, the button assignments are completely customizable. We recommend setting the transmitter to the Robbe™ format.

The tables on page 43 and 44 show the switch assignment when an SM7 sound module is combined with an M25 and AMO trailer electronics. A Y-cable is required for this setup so that the M25 and SM7 can be connected to the receiver's multichannel. Note: Only Servonaut Zwo4 receivers with outputs for

channels 7 and 8 are MultiBus-compatible.

If you want to use the front flashers, daytime running lights, extra 1, or extra 2 functions, you must also connect input F3 to the receiver when using the MultiBus, as these functions cannot be controlled via the MultiBus. You can see the function assignments in the table at the bottom of the page.

## Operation with a Servonaut transmitter

The Servonaut HS12 and HS16 transmitters offer a range of different operating modes, and the function button assignments can be customized very flexibly.

Notes on the various operating modes without using the multichannel can be

## Assignment input F3 in Multibus-Mode

Input	left		right	
	long	short	short	long
F3	daytime running light	flasher	extra 1	extra 2

found in the Servonaut transmitter manual under Lighting Systems / Servonaut Mini Lighting Systems. An M25 generally behaves on input F1 like the ML4 lighting system described there.

If you want to control the M25 using the multichannel, it is best to use channel 8 and set the multiswitch type for channel 8 to Robbe (Rob.) in the Servonaut transmitter's multiswitch menu

The assignment of channels X8a through X8h then corresponds to the transmitter assignment for the Robbe Multiswitch (see table). However, the assignment of the buttons and transmitter types to channels X8a through X8h is completely customizable.

Due to the multichannel, the lighting functions respond with a slight delay; if necessary, the function buttons must be held down a little longer. Alternatively, the transmitter type can also be set to "Pulse" with 0.5s.

As a starting point, you can load the "MultiBusEN" template in the transmitter and customize or expand it.

## Controls assignment for Robbe Multiswitch Lichtset 8413

The M25 and the sound module SM7 can be connected in parallel to one multichannel with a Y-cable. Functions in brackets are only available without an SM7.



	Type	SM7	M25	AMO	AM6
a/1	3-Switch	Starter/ Horn			
b/2	3-Switch		Gearshifting		
c/3	3-Switch		Fog lights/ Rear fog lights	SF6	SF6
d/4	Pushbutton- Switch		Hazard lights/ High beam		
e/5	Pot	Volume		(Servo 3)	
f/6	3-Switch	Dumper/ Martin Horn	(Servo 5th wheel)	(Servo4)	
g/7	3-Switch		Parking lights/ Low beam		
h/8	3-Switch		Indicator L/R		

## Controls assignment for Graupner Nautic Expert

The M25 and the sound module SM7 can be connected in parallel to one multichannel with a Y-cable. Functions in brackets are only available without an SM7.



	Type	SM7	M25	AMO	AM6
a/1	Pushbutton		Indicator L/R		
b/2	Pushbutton		Parking lights/ Low beam		
c/3	Pushbutton		Fog lights Rear fog lights	SF6	SF6
d/4	3-Switch		Gearshifting		
e/5	3-Switch	Dumper/ Martin Horn		(Servo 3)	
f/6	3-Switch	Volume	(Servo 5th wheel)	(Servo 4)	
g/7	Pushbutton- Switch		Hazard lights/ High beam		
h/8	Pushbutton- Switch	Starter/ Horn			

## Programming Mode and Diagnostics

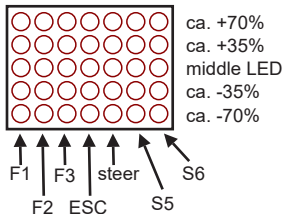
If you press and hold the programming button while turning on the M25, programming mode is activated—the M25 displays “P>”. In this mode, you can change the menu language, teach-in the S-Bus, and access the diagnostics display. A short press selects the next or previous menu item; a long press changes the value or activates the menu item. The last menu item “<-” exits programming mode.

### Diagnostic Mode

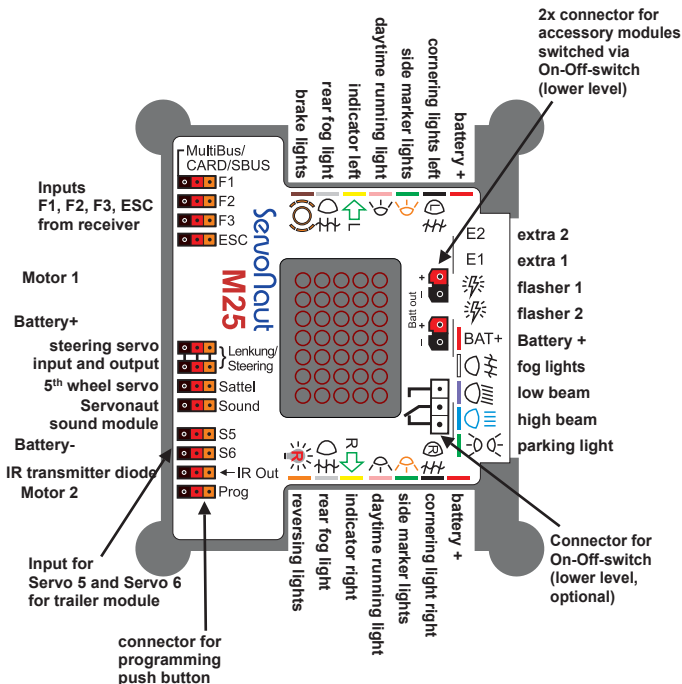
Diagnostic mode helps you check the transmitter settings and find circuit errors. The columns of the display show the status of the inputs in the order of F1, F2, F3, ESC, Steering, S5, S6 (if you are using the S-Bus, the signals from the programmed S-Bus channels are displayed here):

- If the middle LED is flashing, there is no signal at this input.
- If the middle LED is lit continuously, the M25 has detected a signal on this channel for a servo in the center position.

- If you now move the stick for this channel, for example, the next LED above it will light up starting at approximately 35% of the positive deflection, and the third LED will light up starting at approximately 70% of the deflection. For negative deflection, the LEDs below the middle one light up accordingly.



## Connection overview



## Connection Instructions

### Connecting the Battery and Motor

- The necessary motor and battery cables are included, but no connectors. Select a matching connector for the red and black battery cables that fits your battery.
- **Important:** Make sure to **correctly assign red=positive and black=negative** on the connector! An incorrectly connected battery will immediately destroy the Servonaut M25!
- Use connectors suitable for the motor connection on both yellow cables, or solder the cables directly.
- Use only motors rated for the selected battery voltage. The motor must be suppressed; suitable suppressing kits are available from Servonaut. Only suppressing capacitors are suitable; do not use Schottky diodes.

### Connecting Servonaut Sound Modules

Servonaut sound modules are connected directly to the M25 (Sound output). If operation in idle mode is selected (only possible with cruise control), you can

also let the engine (i.e., the engine sound) rev up while stationary. The engine then remains at an elevated idle speed, simulating an auxiliary drive. A brief tap on the brake disengages the auxiliary drive, and the engine sound drops back to normal idle speed.

### Configure your M25

Your M25 has already been sensibly preset by us and is ready for immediate use. Nevertheless, you can make a few adjustments. To do this, you can use the included programming button, a Servonaut DiCa (DisplayCard), or a Servonaut HS12/HS16 transmitter.

### Setting with the “PROG” programming button

If necessary, you can connect the included programming button to the PROG input to change settings.

Pressing the button for the first time after turning on the M25 opens the settings menu and displays the first setting option on the screen. The first two letters of the term are displayed initially;

after a short time, the text scrolls completely across the display once.

By briefly pressing the button in one direction, you can jump to the next setting option; by briefly pressing it in the other direction, you can return to the previous one. If you hold the button down longer, the value of the option changes to the next or previous value.

### **Setting with the DiCa Display-CARD**

Alternatively, you can also use a Servonaut DiCa or a Servonaut transmitter for setting. In both cases, operation is then performed via the text display and buttons of the DiCa or your transmitter.

To keep track of the many setting options, the first menu item switches between the settings for the lighting system and the settings for the speed controller



Please wait approx. 10 seconds after the last change (the display flashes twice) before turning off the M25 so that the M25 can save the settings.

### **Possible settings at a glance**

On the M25 display, the text in parentheses is not shown for the menu items to provide a clearer overview. For the individual options, the factory default values are underlined.

For “On” and “Off,” “✓” and “x” are displayed for easier distinction:

#### **menu (light, speed controller)**

The first menu item switches between the settings for the lighting system and the settings for the speed controller. If “light” is selected here, a short press of the button switches to the first or last setting for the lighting system. If “speed controller” is selected here, it switches to the first or last setting for the speed controller.

#### **Lighting System Settings**

**light bulb (effect)**  
**(off, 20%, 40%, 60%, 80%)**

Unlike incandescent bulbs, LEDs switch on and off abruptly. The incandescent bulb effect allows you to simulate incandescent bulbs in a model with LED light-

ing. The percentage setting determines the intensity of the effect.

Note: The Servonaut AMO cannot simulate the incandescent bulb effect. When driving with a trailer or semi-trailer using AMO, it may therefore be advisable to disable the effect.

**xenon (effect)**  
(off, 20%, 40%, 60%, 80%)

This effect applies to the low beams. It simulates the flickering of a xenon lamp. The setting varies the duration of the effect.

**parking (light)**  
(20%, 40%, 60%, 80%, 99/100%)

Sets the brightness of the parking lights and side marker lights.

Note: The brightness settings also affect the trailer electronics, but the trailer responds with a slight delay when changes are made.

**driving (light)**  
(20%, 40%, 60%, 80%, 99/100%)

Adjusts the brightness of the driving lights or low beams.

**indicator**  
(20%, 40%, 60%, 80%, 99/100%)

Adjusts the brightness of the indicators and side marker lights when flashing. For sequential indicators, etc., please leave this at 100%.

**indicator switchoff**  
(manual, time, steering)

manual: You must turn off the indicator manually.

time: The indicator turns off automatically after a short time.

steering: The indicator is turned off by a steering when returning to the neutral position.



**Note:** Just like in a real vehicle, you must always turn on the turn signal yourself.



**Multibus Tip for Experts:** If you set the CARD option for indicators from time to manual and select the Pulse type for the HS12/HS16 control, the turn signal duration can also be adjusted via the pulse length at the transmitter. However, early deactivation

is not possible in this case! The pulse duration must be more than 3 seconds.

### **hazard (while) rev(ersing)** **(off, on)**

On: When reversing or engaging reverse gear, the hazard lights turn on along with the reverse lights.

Off: Hazard lights and reverse lights operate independently.

### **combi (effect)** **(off, A, B, C)**

**A**=Front, **B**=Rear, **C**=Front+Rear

The combination effect combines the parking lights and low beams at the front using shared LEDs or bulbs on the low-beam output. At the rear, the combination effect outputs the parking lights together with the brake lights on the brake light output.

This allows you, for example, to connect older models with few compartments in the headlights (e.g., old Wedico models) without additional wiring.

Note: Servonaut light boards already combine the LEDs and brightness levels

to match the original, so please disable this effect on these boards.

### **US rear (light)** **(off, 20%, 40%, 60%, 80%)**

When the US rear light is turned on, the left and right rear fog light outputs switch functions and become left and right turn signal/parking/brake light combinations. In this case, the value here sets the brightness of the parking light.

### **flasher** **(off, 1, 2, 3, 4, 5)**

There are five variants to choose from for front flashers:

1. 1x left, 1x right, alternating
2. 2x left, 2x right, alternating
3. 2x flash, asynchronous on both sides
4. 3x flash, asynchronous on both sides
5. 1x long, 2x short, asynchronous on both sides

Off: The flashlight functionality is disabled. The two outputs function as normal switching outputs, e.g., for accessories.

Please note: The two outputs can only be switched on and off together! See the sections on control on pages 9 through 14.

#### **fifth wheel** **(normal, reverse)**

Reverses the movement of the fifth wheel servo.

#### **cornering (light) (off, on)**

Off: The cornering lights outputs function only as cornering lights during driving (if you do not want cornering lights, connect the corresponding LEDs to the fog light output)

On: In addition to driving, the cornering lights are also switched on via the indicators.

#### **steering** **(normal, reverse)**

If the cornering light comes on the wrong side, you can use this option to swap the sides.

### **Speed Controller Settings**

**acceleration**  
**(20%, 40%, 60%, 80%, 99/100%)**

Determines the maximum acceleration at full throttle. Lower values simulate the handling of a heavy vehicle.

**brake (power)**  
**(20%, 40%, 60%, 80%, 99/100%)**

Determines the maximum braking effect on the drive channel.

Low values simulate the handling of a heavy vehicle. However, the holding force of the motors—e.g., on a slope—remains unchanged; only the timing behavior is adjusted here.



#### **Emergency Brake Function:**

- Without cruise control: if the stick is suddenly moved to the center position, the model brakes abruptly.
- With cruise control: moving the stick all the way down/back triggers an emergency stop. Please test the behavior beforehand and, if necessary, increase the stick travel on the transmitter.

**start(ing) aid**  
**(off, 20%, 40%, 60%, 80%)**

Assists the motor start-up when starting to drive. Caution: The start-up assist

puts a load on the drivetrain and should only be set as high as necessary to achieve the smoothest possible start.

### **gear (box) (off, on)**

On: The M25 behaves like a G24, i.e., a 4- or 3-speed automated manual transmission is simulated with or without cruise control.

### **clutch (effect) (low, ..., medium, ..., high)**

During simulated shifting, the controller generates a slight jerk via the drive motor. This setting determines the intensity. Only when transmission simulation is active.

### **coupling (time) (short, ..., medium, ..., long)**

During simulated shifting, the controller generates a slight jolt through the drive motor. This setting determines the duration of the “shifting process.” Only when transmission simulation is enabled.

### **cruise (control) (on, off)**

On: With cruise control, the driving behavior corresponds to a Servonaut M20+, M24, G24, or K40.

Off: Without cruise control, the controller behaves like a Servonaut S22, i.e., like a standard controller—you can drive directly forward and backward. Neutral mode is no longer possible (see connection of sound modules). To achieve the desired behavior, the transmission simulation may also need to be turned off.

### **idle (off, on)**

On: Effective only when cruise control is enabled: Between forward and reverse gears, the M25 shifts into idle.

The engine is then turned off, but accelerating affects a connected sound module. This makes it possible to rev the engine even while stationary. The engine speed then remains at an elevated idle to simulate a hydraulic system or a running auxiliary drive. Only when the brake is applied does the speed return to idle. Only in neutral can you then shift back to forward or reverse.

**(motor) direction**  
**(normal, reverse)**

Reverses the rotation direction of the motor. Please only switch while stationary.

**backwards**  
**(60%, 80%, 99/100%)**

Limits the maximum speed when driving in reverse.

**(reversing) beeper**  
**(Off, On)**

Only with Servonaut sound module: Allows the reverse beeper to be turned off.

**(battery) protection**  
**(auto, high, low, off)**

In the "Auto" setting, common battery types—NiMH/NiCd 6- and 10-cell (7.2V and 12V) as well as LiPo 2S and 3S (7.4V and 11.1V)—are automatically detected. The battery type setting is then ineffective.

High: selects higher thresholds and protects the battery in use.

Low: selects lower thresholds; the battery is discharged further for longer runtime.

Off: disables the protection function. The battery type setting is then ineffective.

**(battery) type**  
**(NiMH, LiPo, Lilon, LiFePo, Lead)**

For the "High" and "Low" settings, the battery type must also be specified. The battery protection works for 2S and 3S LiPo, 2S and 3S Lilon, 3S and 4S LiFePo, as well as 8V and 12V lead-acid batteries. See the table on the following page.

### **Undervoltage Warning**

If the M25's battery protection is triggered, the drive motor is throttled. At the same time, the lights are completely turned off and the M25 causes the turn signals to flash briefly at regular intervals.



**NiMH and NiCd:** For 6 or 10 cells “auto” or “low” can be used. For 8 or 12 cells “high” must be used!



**Lead-Acid (Pb):** For a 12V battery “auto” is possible, but not optimal. For a 10V battery the cut-off feature cannot be used at all, please turn it off.

Protection:	2s	3s	4s
<b>LiPo</b>	auto, high, low	auto, high, low	not supported
<b>Lilon</b>	high, low	high, low	not supported
<b>LiFePo</b>	not supported	high, low	high, low

Protection:	6 cells 7.2V	8 cells 9.6V	10 cells 12V	12 cells 14.4V
<b>NiMH (NiCd)</b>	auto, low	high	auto, low	high

Protection:	6V	8V	10V	12V
<b>Lead-Acid</b>	not supported	high, low	off	high, low

## Transmission to the Trailer

The M25 already has a built-in IR transmitter; you only need an IR diode (from the IR set, available as an accessory).

- For long range, insert the diode from the IR set with the orange cable facing upward.
- For short range, e.g., for transmission through a kingpin, insert the diode from the IR set with the orange cable facing down.

The "AIRDIODE New" from the LA10 can also be used, but only for short range with the orange cable facing down.

The lighting functions for parking lights/low beams, brake lights, reverse lights, left and right turn signals, and hazard lights are controlled via infrared on the AMO and AM6 trailer electronics in parallel with the corresponding outputs of the M25.

The SF6 output on the AMO and AM6 is switched on and off in parallel with the rear fog light output of the M25.

The Servo 5 and Servo 6 outputs of the AMO and AM6 are controlled directly by the two S5 and S6 inputs of the M25.

The Servo 3 output of the AMO is controlled via the Multibus from Multibus channel E/5. Note: Servo 3 on the AMO can only switch between the end positions. When controlled via servo channels (including via the S-Bus), Servo 3 on the AMO is activated by long pulses on input F2 with a 50% duty cycle.

The Servo 4 output of the AMO is controlled via the Multibus from Multibus channel F/6 in parallel with the saddle plate servo on the M25. Note: Servo4 on the AMO can only switch between the end positions. When controlled via servo channels (including via the S-Bus), Servo4 on the AMO is activated in parallel with the saddle plate servo on the M25 by long pulses on input F3 with a 50% pulse width.

See also the tables on pages 10 and 12 or 13.

## Matching accessories from Servonaut

### IR-Set

- Set consisting of an infrared transmitter diode and patch cable suitable for M25 and LA6

### Schalt-AN/AUS (Switch-ON/OFF)

- Slide switch with cable for connection to the M25 for central power-off of the M25 and accessories connected to the sockets

### AMO / AM6

- Trailer electronics with wireless IR data transmission

### GM32U390 / GM32U450

- Underfloor drive motors with planetary gearboxes for 7.2V and 12V

### SM3

- Servonaut SM3 truck sound module, driving situation-dependent engine sound

## Safety Notes

Do not expose the module to water or oil. Do not cover it with foam. Disconnect the battery immediately after use. Do not connect the battery with wrong polarity. Avoid any short circuits. Always use caution when connecting the battery. Always turn on the transmitter first.

## Warranty Information

Warranty is granted for one year from date of purchase. This warranty does not cover damage due to incorrect handling or wiring, over voltage or overloading. This warranty does not cover consequential, incidental or collateral damage under any circumstances. By the act of using this product the user accepts all resulting liability.

Subject to change without notice.

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**Ein wichtiger Hinweis zum  
Umweltschutz:**

Elektro- und Elektronik-Altgeräte gehören  
nicht in den Hausmüll!

Entsorgen Sie bitte diese Geräte bei den  
kommunalen Sammelstellen. Die Abgabe  
dort ist kostenlos.

*Help us to protect the environment.  
Please do not dispose electrical and elec-  
tronic equipment in domestic household  
waste.*



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