ML4
Mini lighting system for model vehicles

Scope of delivery

1 x ML4 module
1 x Instructions version 201

Technical data

Operating voltage switching outputs	4.8 to 18V
Operating voltage from receiver	4.8 to 6V
Switching functions:	Blinker, breakdown blinker,
	Parking and driving lights
Switching capacity:	4 x 700mA short-circuit-proof
Quiescent current consumption:	max. 22mA with 6V
control:	Prop or switching channel with three positions
Plug-in system:	UNI
Signal processing:	for positive pulses
Signal timing:	1 to 2ms at 40 to 60Hz
Temperature range:	0 ... 40ºC
Dimensions:	approx. 45x22x12mm

Range of functions

The ML4 mini lighting system provides four switching outputs for indicators, breakdown indicators, parking lights and driving lights. The module is the ideal addition to a speed controller that already has outputs for brake lights and reversing lights. The T20, S20 and M212T controllers and M220 from the Servonaut controller range can be easily combined with the mini lighting system. The ML4 largely corresponds in function and operation to the integrated lighting system in the Servonaut M20+ speed controller.

The indicators are operated manually and are not linked to the steering. This enables a realistic function. The module can be set to switch off the indicators automatically after 5 seconds by inserting a jumper.

Connection to the receiver

The connection to the receiver is made using the supplied three-pole cable with servo plug. You will need a free channel on the joystick or a channel with a switch or button with three positions. It makes most sense to use a "right/left" channel of the joysticks. If the assignment of the channels is unclear, it is best to use a servo to find the desired channel. Important: Set the trim for this channel to center on the transmitter, switch the servo travels to 100% and switch off all special functions on computer systems! Both the ML4 itself and any connected servos are supplied with power via the receiver. The ML4 does not require adjustment and is permanently set to the pulse widths commonly used by PPM transmitters today. Only with older or very simple transmitters may it be necessary to adjust the trim for the channel used.

Note for owners of Multiplex remote controls: Please set the signal format UNI for the channel used!

Connection to the battery

The lamps or LEDs at the switching outputs of the ML4 are supplied separately via the black (minus) and red or yellow (plus) battery cable.

The connection can be made to the receiver battery (if available), the drive battery or a separate battery as required.

Switching outputs

The ML4 outputs have a universal design and are suitable for both incandescent lamps and relays or electronic loads such as flashing circuits or signal transmitters. Series resistors are essential LEDs.

A complete LED set with resistors is available as an accessory.

The four outputs on the plug connector switch to earth or the negative battery terminal. The lamps must therefore be connected between the respective output and one of the two connections marked "+". For LEDs, the anode must be connected to one of the "+" connections via a resistor and the cathode to the desired output.

Ensure that the operating voltage of the bulbs is suitable. For a 7.2V system, bulbs with 6V should be used; for a 12V system, corresponding bulbs with 12V should be used.

Tip: Instead of a 12V lamp, you can also use two 6V lamps of the same type in series.

Operation

The indicators (outputs L and R) are activated from the center position of the cross stick (or the switch) by briefly pressing to the left.
or right are switched on and off. With the jumper in position B, the indicators switch off automatically after 5 seconds; with the jumper in position A, they must be switched off manually by briefly pressing the stick to the left or right again. The breakdown blinker is switched on and off by pressing and holding the stick to the left.

To switch the parking and driving lights, the stick is held to the right. First the parking light (output 1), then the parking and driving lights together (outputs 1 and 2) are switched on, then both functions are switched off again, alternating in about 1 second.

If the right turn signal is activated when the stick is moved to the left, switch the corresponding channel in the transmitter (servo reverse). You will find instructions on this in the operating instructions for your Remote control. If your system does not support this function, you can also swap the left and right blinker connections on the module. However, this also changes the position of the breakdown blinker and light functions compared to the description above.

Warnings

Protect the module against moisture, humidity and dirt. Do not short-circuit or overload the outputs. Always disconnect the battery from the model electronics and the ML4 module after operation and for charging!

Liability

As we are unable to monitor the intended and correct operation of our assemblies, our liability shall in any case be limited to the purchase price. Liability for consequential damage is excluded.
Observe the mandatory safety recommendations for model making during operation.

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