Elektronik Sachse MHP GmbH & Co. KG

Installation Manual

Regulator REG4 for three-phase alternators with field winding

Item: REG4

version: 5bbf6cb

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1 Function

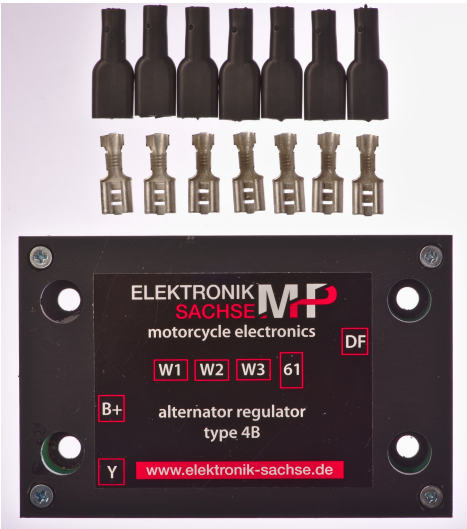
The Elektronik Sachse REG type regulators are modern electronic regulators that are very efficient and suitable for many different types of bikes, classic and modern. This regulator is not suitable for bikes with a positive ground.

A battery is required for this regulator to operate. It will not regulate without a battery. It can be used with lead acid or LiIon batteries, but not with super caps.

The voltage is measured on the W pins and compared to the target value. Depending on the voltage level, the regulator sends a higher or lower voltage to the field winding (DF), which in turn increases or decreases the voltage output of the alternator.

This regulator replaces the original regulator and diodes/rectifier (if applicable). The original regulator and rectifier has to be disconnected.

2 Scope of Delivery



3 Mounting

The regulator is not water proof. However, the electronics are coated with a special coating, so water can't cause any damage. That having said, the regulator should be mounted in a well ventilated location in a way that water entering the regulator has a change to drain. For example with the connection terminal facing down. Water residing in the regulator permanently is not desired and might shorten the lifetime.

The more air flow the regulator is exposed to, the more power the regulator can drive. So if a high wattage alternator is used, more care should be taken in placing the regulator in a well ventilated spot.

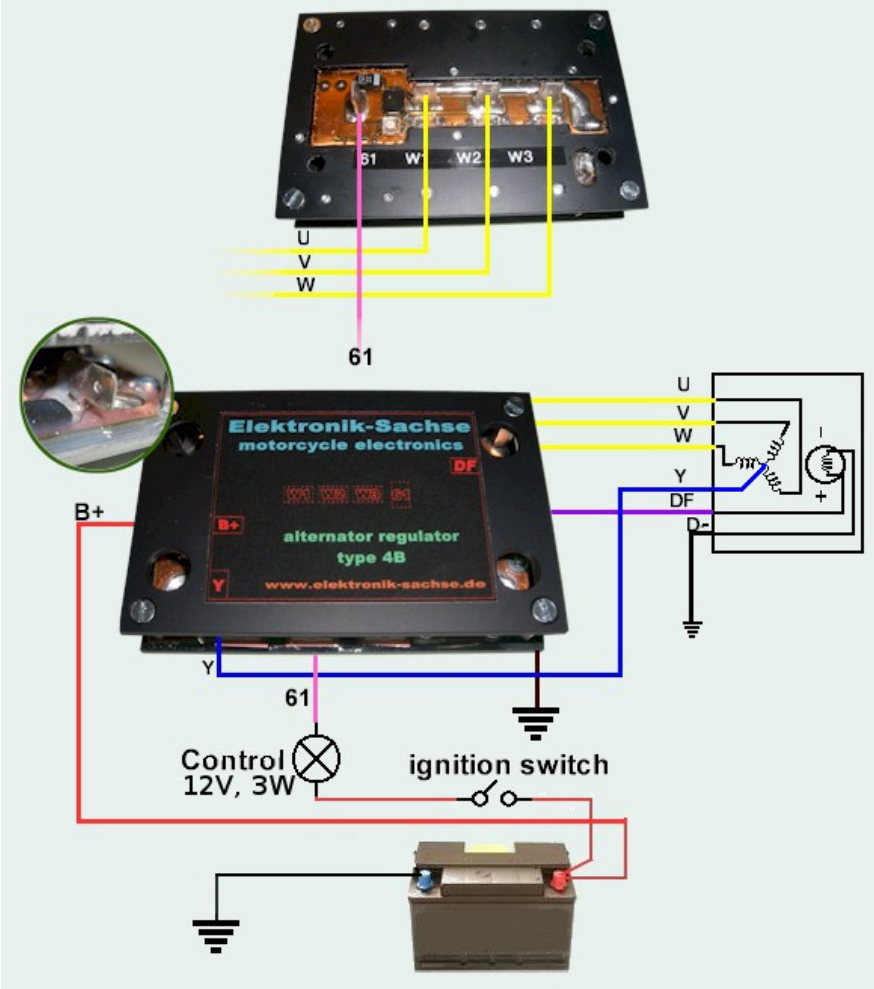


Figure 1 General schematic of how the regulator is connected.

4 Electrical Connections

Connector	Function
W_1	Alternator AC
W_2	Alternator AC
W_3	Alternator AC
61	Charge control light, not optional
DF	Field winding
B+	Battery, charging current
Y	Alternator, centre tap

The charge control light is *not* optional for this regulator. The regulator utilises the charge control light current to generate a magnetic field in the field winding. If no charge control light is used, a 68 Ω, 5 W resistor can be used instead. Also if a LED is used instead of a traditional bulb, the current is too low and the abovementioned resistor needs to be put in place. The resistor needs to be connected *parallel* to the LED in this case.

The regulator housing is connected to minus (ground). It's not required to run a separate connection to the regulator housing. However, the housing needs to have proper ground connection to the frame. The anodised aluminium is removed around the mounting holes to allow screws to contact the regulator housing. If other means of mounting is desired, one can of course connect a wire to one of the regulator's two aluminium plates or one of the four stud posts.

Which of the three leads from the alternator (U, V, W) go on which terminal connection on the regulator (W_1, W_2, W_3) is of no importance.

Some alternators don't feature a Y-connection. In that case leave it unconnected. The regulator works without connecting Y.

The Y and 61 connections can be run with a thinner wire, e. g. 1.5 mm^2. The remaining connections should have a larger wire diameter to minimise losses, e. g. 2.5 mm^2 – 6 mm^2.

All connections are mandatory, except if specifically mentioned that they're optional.

The provided 6.3 mm crimp connections can be crimped using special crimp pliers or also with regular pliers (although not advisable). In the latter case it might make sense to solder the crimp connections to the wire to guarantee a good connection.

5 Settings

All Elektronik Sachse REG type regulators have an adjustable charging voltage. The charging voltage can be changed according to the battery type used and ambient temperature. The regulators come with a default setting of 14 V, which is a sane default value and compatible with all types of batteries. So it's not necessary to readjust the charging voltage after installation.

To fine-tune the charging voltage, start with a well charged battery and turn off the headlights for the following procedure. Measure the voltage directly on the battery and rev up the engine. If the voltage on the battery is lower then the desired voltage, turn the rotary dial *clockwise*. If it's too high, turn the dial the other way.

The selectable voltage range is approximately 13 V – 15 V.

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