

## **5-Volt Voltage Stabilisation for Locomotives with clocked control, light changing function, adjustable motor starting delay and decoder interface for LGB® multi train decoder - CL60015**

**Specially designed for custom-built traction vehicles and older LGB® locomotives still running with 18 volt lighting systems!**

**To date, customers have been confronted with the problem of how to fit custom-built or older LGB® locomotives with a lighting system corresponding as closely as possible to standard series-produced systems in the simplest manner possible. This is no longer a problem!**

*Please note! A cooling facility on a lead weight or in the form of a cooling plate is necessary for the start-up delay!! Please see the point "Installation of cooling plate"!*

**Our module has been developed with due regard to the following requirements!**

- Minimum possible space requirement
- Light changing function for front & rear lighting (5 volt), max. 3 lamps
- Output for cab interior lighting (5 volt), max. 3 lamps
- Output for 1 smoke insert (5 volt)
- Decoder interface for LGB® multi train decoder
- Also suitable for two motorised locomotives in analogue or digital mode (with 2 LGB® multi train decoder).
- Clocked light control = no cooling plate required - reduced electric power consumption, resulting in marked reduction in heat loss for enhanced performance on the track system
- Infinitely adjustable motor starting delay (from approx. 4-10 volt) with unchanged final speed (only in analogue mode with additional cooling plate)
- Fitting holes provided
- Connection facility for mode selector switch CL60002
- Additional connection facility for a sound module or a special function of the user's choice in conjunction with mode selector switch CL60002
- Simple to connect

### **Available accessories:**

5 volt holder and lamps (please ask for the different items)  
Mode selector switch with cable (CL60002)

### **Package contents:**

1 p.c. board with installation instructions

A=ampere

### **Technical data:**

Input voltage:

0-24 volt

Smoke:

6,4 volt - 0,5 A

Motor output:

0-22 volt 2x 0,8 A

Sound:

0-24 volt - 1 A

Light front/rear

Output 6,4 volt  
0,1 A per output

### **Note:**

Please read the description below carefully before commencing installation.

### **Modification/installation:**

For the purpose of connecting the screw terminals, markings are provided on the rear of the p.c. board to indicate which terminal permits which function. The p.c. board incorporates three holes for the purpose of installation!

**Installation of cooling plate:**

The two transistors must be cooled in analogue operating mode.

**Size:**

For 1 motor approx. 2/3 of the size of the p.c. board

For 2 motors approx. the same size as the p.c. board

**When using multi train systems:**

Should you use the LGB multi train system, you will require a supplementary decoder cable, as when running a locomotive fitted with a decoder interface, plus one or two multi train decoder, depending on the type of locomotive concerned. Connection is carried out as described in the manuals for the multiple train receiver and the supplementary decoder cable. Further information on connection is to be found under "Installation in analogue mode". The light can be operated via the light switch, the smoke insert via key F1.

The free slots, „GND“, „F1“ and „+24 Volt“ are not currently assigned.  
Further information is available in this connection on request.

Should you wish to use a decoder from the Lenz company, please request a separate circuit diagram, which is currently still in the preparatory stage (situation as per July 1998)!

We would point out once again that neither the 5 volt lamps nor the 5 volt smoke insert require to be replaced when using this p.c. board in digital mode!!!

**Installation in analogue mode:**

If you do not presently possess a multi train system, you can use the p.c. board in analogue mode and switch to digital mode at a subsequent juncture, should you acquire such a system!

This is made possible by the integrated interface!

**Terminals:**

Motor 1:	Connection of the motor, LGB® motor block colours yellow (ye) and green (gn)
Track:	Connection of the track voltage, LGB® motor block colours brown (br) and white (wh)
Smoke:	Connection of a 5 volt smoke insert possible
Front lighting:	All the supply cables for the front lighting are to be connected here (5 volt)
Rear lighting:	All the supply cables for the rear lighting are to be connected here (5 volt)
Interior lighting:	Connection facility for 5 volt interior cab lighting
Sound:	Facility for connection of a sound module
Motor 2:	To be connected only if a second motor is installed!!!

Customers who choose not to use the additionally available mode selector switch (CL60002) when installing the p.c. board must ensure that the plug-in jumper on the connector panel of the switch output is not removed!!!

The potentiometer provided on the p.c. board serves to set the motor starting delay. Setting can be carried out using a small screwdriver. This enables you to set the voltage at which your locomotive is to start up within the range from approx. 4 - 10 volt.

It should be noted that the setting for the motor starting delay does not affect the final speed!!!

Our products undergo thorough final inspection at the end of the production process. Should you nevertheless establish a defect, please return the article to your dealer together with your receipt, stating the nature of the defect, or return the module directly to us. You will be required to pay the carriage for articles which you return to us! You will find our address on the package.