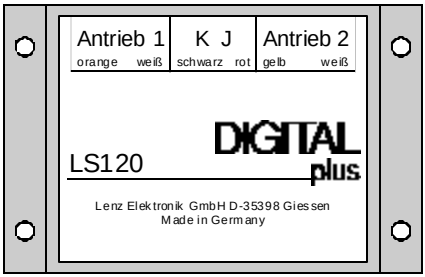
- Designed to control two LBG switch Machines
- Suitable for year round outdoor installations
- Compatible with all NMRA DCC systems.

Information LS120

Art. No. 11120

DIGITAL plus

November, 1996



LS120 Large Scale Accessory Decoder

Accessory decoders are the link between the DIGITAL plus DCC system and *accessory devices* (e.g. turnouts, signals, decoupling ramps, etc.) on your model railroad.

The accessory decoder LS120 is specifically designed to work with the LGB EPL-drive. The LS120 has two outputs enabling the use with two different turnouts or signals with EPL-drive. Each output can be connected to two EPL-drives simultaneously, which presents an advantage for crossovers, as both turnouts can be connected to the same output.

The LS120 receives commands sent by an NMRA DCC command station/power station and these commands instruct the LS120 to control the connected switch machines on the turnouts (or the other *devices*). The commands are initiated from your NMRA DCC *Input Devices*, such as the Basic Handheld LH100, the Tower Cab LW100, the Computer Interface LI100 or the command station converter module LC100.

The LS120 in compatible with any NMRA DCC command station that can control accessory devices.

The sealed enclosure of the LS120 makes it ideally suited for use on outdoor layouts.

Programming the LS120

The LS120 can be programmed on the programming track or on the layout.

Before connecting the LS120 to the EPL-drive, you have to decide which number to assign to the accessory decoder, the address of the accessory decoder has to be programmed.

Explanation of the turnout addresses

The LS120 is always programmed for a group of 2 turnout addresses (since you can connect two independent turnouts). These are for example the numbers 1 and 2, 3 and 4, 5 and 6, up to 255 and 256. It is not possible to program a single LS120 to the

numbers 2 and 3, 4 and 5, since these numbers belong to 2 different groups.

There are two ways of programming the LS120:

1. Programming the LS120 on the programming track (the programming output of the Command Station LZ100).
2. Programming the LS120 when it is connected to the track using the Power Station LV100.

Programming using the programming track

The LS120 supports register mode as defined in NMRA RP-9.2.3. For this mode, you will need a Command Station (LZ100) and a Handheld (LH100). Furthermore, we are assuming that you are familiar with the controls of these units, that they are correctly set up and switched on.

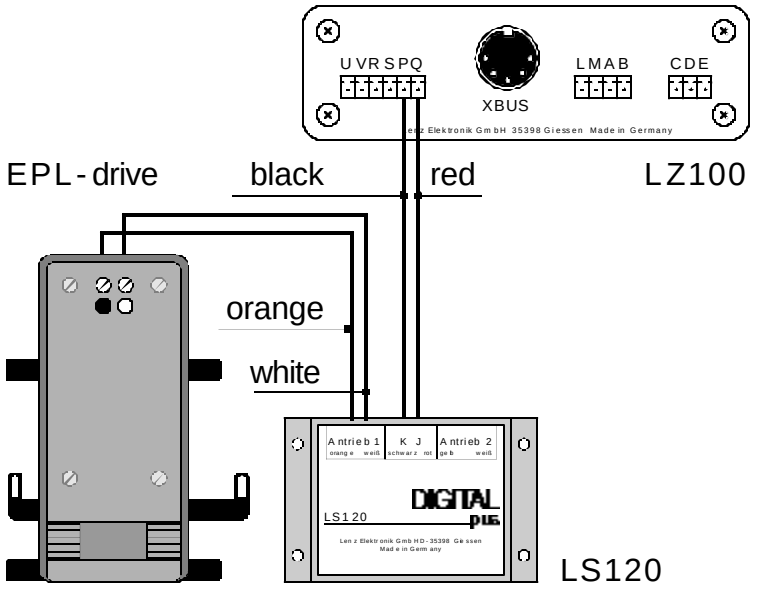


Figure 1: Connecting the LS120 to the programming output of the command station. The connections to the Handheld and the transformer are omitted for clarity.

As shown in figure 1, please connect the red and black cable form the LS120 with the programming output (terminals P and Q) on the LZ100. Please connect the EPL-drive as shown to the white and orange cable. On the Handheld unit, please select the programming mode (please consult your manual for the LH100 or the system manual for further information).

The address is stored in memory location 1 (register 1). Please select the memory location 1 in register mode on the Handheld and press the 'Enter' - button. Please enter the turnout address for the LS120 and confirm the programming by pressing 'Enter' again.

The accessory decoder is now programmed for the correct address. In case you receive an Error-message, please proceed as follows:

Error	probable cause
ERR01	There is a short circuit on the programming output. Please check the wiring and try again
ERR02	The LS120 is not confirming the programming. The EPL-drive is not or incorrectly connected. Most likely, the LS120 is still programmed for the correct address.

Programming using the Power Station LV100

The LS120 can be programmed when it is connected to the track. When set up in this mode the LS120 takes the first accessory address is sees on the track as its address. This programming mode can be used anytime after installing the unit.

You will need the Command Station LZ100, a Handheld LH100, and a Power Station LV100 (DIGITAL plus basic package). Furthermore, we assume that you are familiar with operating these units, and that they are correctly connected. To begin, please switch off the track voltage.

Caution
If connected incorrectly, you can easily destroy the decoder. Please double check your installation before attempting this form of programming

As shown in figure 2, please connect the red and the black cable to the terminals J and K on the LV100 (the black and red cable may be exchanged). Please connect the orange cable to the first terminal on the EPL-drive. The second terminal on the EPL-drive

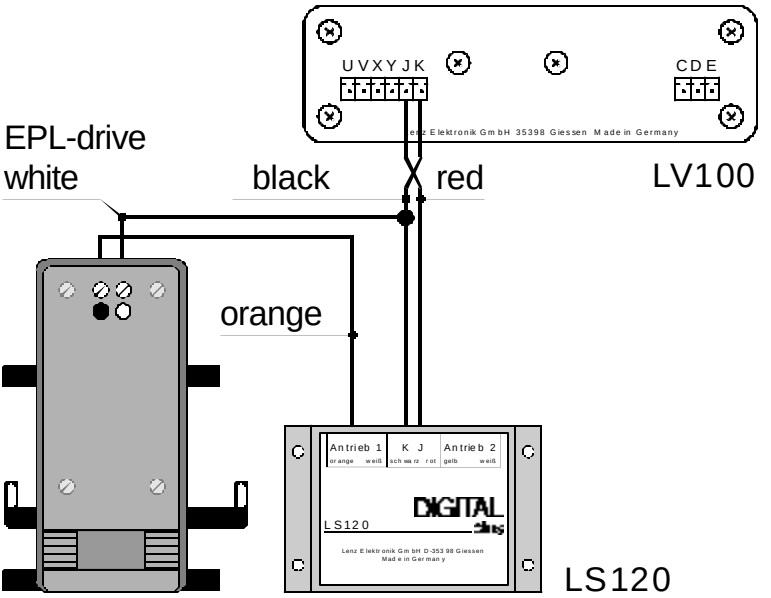


Figure 2: Connecting the LS120 for programming by the LV100. The connections to the Handheld and the transformer are omitted for clarity.

is connected to the black cable on the LS120. Switch on the track voltage and, using the Handheld, change to the function 'switch' (sequence F, 5). Call one of the two addresses to be assigned to the LS120. Confirm the address by pressing the 'Enter' button.

Now please press either the '+' or the '-' -button on the Handheld. This initiates the passing of a switch command through the track output of the LV100. This command contains the address,

which is recognized by the accessory decoder and stored in memory location 1. Switch off the track voltage and remove the connection from the EPL-drive to the black cable of the LS120.

Connecting the EPL-drive to the accessory decoder LS120

Figure 3 shows the connection between the EPL-drive and the LS120.

The red and the black cable supply the LS120 with energy and switch commands from the terminals J and K of the Power Station LV100. If you not only select your accessories digitally, but also run your engines digitally, terminals J and K are connected to the track. In that case, you can connect the LS120 to the track at any point on your layout, simplifying the wiring.

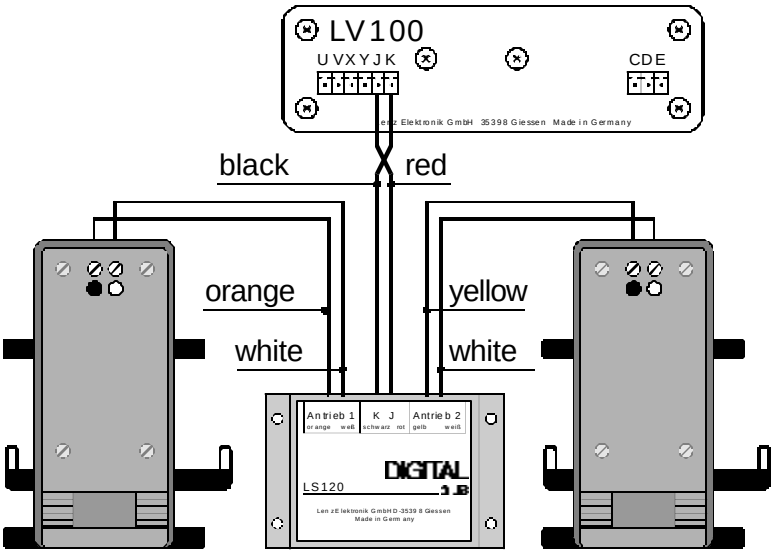


Figure 3: Connecting the EPL-drives to the LS120. The wiring of the Command Station, the Handheld and the transformer are omitted.

Warranty

Lenz GmbH does everything it can do to ensure that its products are free from defects and will operate for the life of your model railroad equipment. From time to time even the best engineered products fail either due to a faulty part or from accidental mistakes in installation. To protect your investment in Digital Plus products. Lenz GmbH offers a very aggressive 10 year Limited Warranty.

This warranty is not valid if the user has altered, intentionally misused the Digital Plus product, or removed the product's protection, for example the heat shrink from decoders and other devices. In this case a service charge will be applied for all repairs or replacements. Should the user desire to alter a Digital Plus Product, they should contact Lenz GmbH for prior authorization.

Year One: A full repair or replacement will be provided to the original purchaser for any item that that has failed due to manufacturer defects or failures caused by accidental user installation problems. Should the item no longer be produced and the item is not repairable, a similar item will be substituted at the manufacturers discretion. The user must pay for shipping to an authorized Lenz GmbH warranty center.

Year 2 and 3: A full replacement for any item will be provided that has failed due to manufacturer defects. If the failure was caused by accidental user installation or use, a minimal service charge may be imposed. Should the item no longer be produced and the item is not repairable, a similar item will be substituted at the manufacturers discretion. The user must pay shipping to and from the authorized Lenz GmbH warranty center during this portion of the warranty period.

Year 4-10: A minimal service charge will be placed on each item that has failed due to manufacturer defects and/or accidental user installation problems. Should the item no longer be produced and the item is not repairable, a similar item will be substituted at the manufacturers discretion. The user must pay shipping to and from the authorized Lenz GmbH warranty center during this portion of the warranty period.

Please contact your dealer or authorized Lenz GmbH warranty center for specific instructions and current service charges prior to returning any equipment for repair.

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This equipment complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.