Partner for the Model Railroading Industry

Set-01
Advanced DIGITAL plus starter set

Art. No. 60000
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Digital plus by Lenz ™

Introduction to Lenz GmbH

Welcome to the world of DIGITAL plus and to Digital Command Control.

Lenz Electronic has been developing electronic components for industrial applications for more than 15 years. Since 1980, we have been developing for and supplying to the model railroad industry. Our goal has been to supply compatible systems, simple to use, low in cost and developed for the future.

The compatible command control system, developed by us in 1980, and patented 5 years later, is the basis for the command control systems of different manufacturers worldwide. It is the only command control system that allows the use of decoder equipped locomotives on conventional layouts, and integrates the use of conventional locomotives without additional equipment into digital operations. In 1994 The National Model Railroad Association established standards for Digital Command Control. These standards were based on the early work performed by Lenz GmbH.

DIGITAL plus, ROCO 'DIGITAL is cool', 'Arnold digital', 'Märklin Digital=' and since 1995 also LGB all use the same signal format at the track. The compatibility of all these systems ensures the free use of locomotive and accessory decoders of all these brands.

Lenz GmbH as the leader of Digital Command Control products has many firsts to its credit.

We have introduced the simple programming of the locomotive decoder. Locomotive addresses and properties can be set, adjusted and changed without opening the locomotive.

In 1992, in conjunction with ROCO, Salzburg, we developed a connector for locomotives which allows a simple conversion to digital operations.

We have also introducded the first DCC back emf decoder to provide you the modeler with the smoothest slow speed control that is technically possible.

In developing DIGITAL plus, we have been listening to you, the model railroader, and consequently employed the techniques already employed in our earluer systems: Arnold Digital and Märklin Digital=.

This continuous development means that we are already preparing today's components for the future. We will offer new features in the future using today's hardware. Our components are designed for UPDATES. The version of software contained within this set is the third major upgrade in the system and we have not stopped development!

Components of your DIGITAL plus Set 01

Set 01 contains four components: a locomotive decoder, an LH100 Handheld, a LZ100 Con\mmand Station and a LV101 Power Station. These are shown in Figure 1

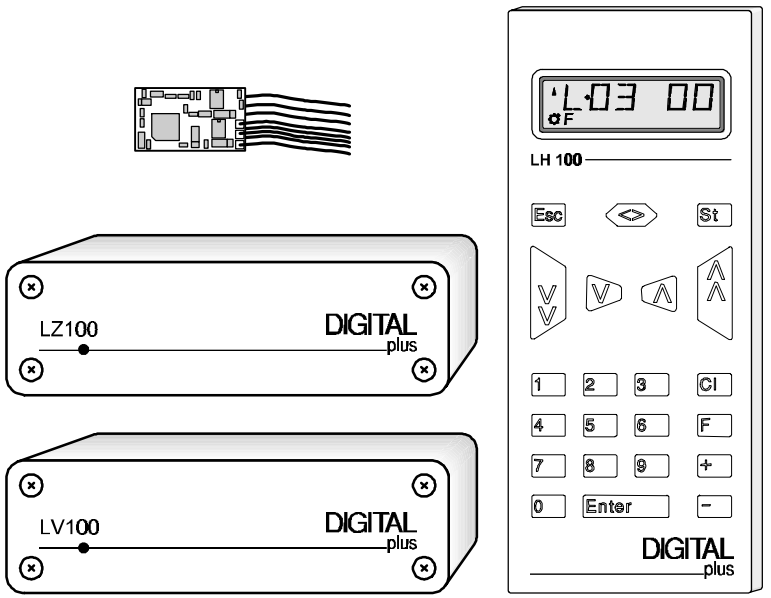

Figure 1: Components of yout DIGITAL plus Set 01

The functionality and use of each component is described in detail in their resp[ective manuals. The remainder of this overview will provide you a quick setup overview.

Quick Setup

In order to operate your DIGITAL plus DCC system you will need some track, a locomotive and an external transformer. (Note: While a single transformer is sufficient for operation, we recommend an separate transformer for both the LZ100 and the LV101)

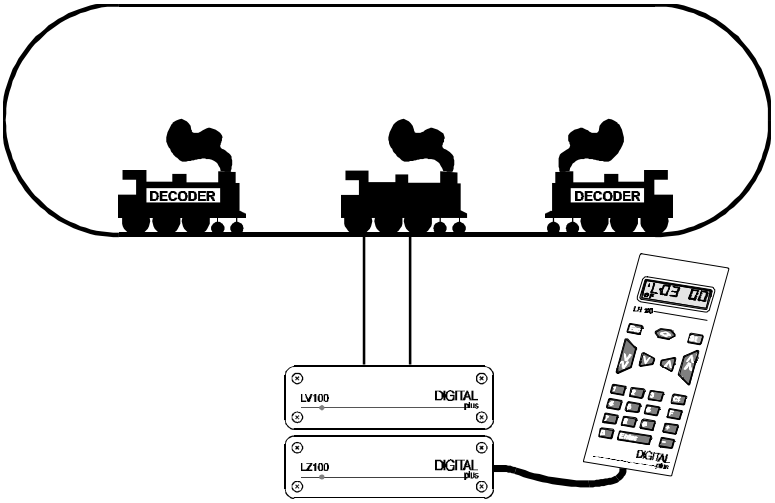

Figure 2: Connecting your DIGITAL plus system to yout layout

Connecting the LZ100 and the LV101 together is simple. Connect the transformer to terminals **U** and **V**. For HO scale and smaller, the transformer output voltage should be 16V AC or DC. In order for the Power Station to give off its full 3A current, the transformer also needs to be able to deliver an output current of at least 3A (50VA). Use a suitable, UL listed transformer designed for model trains. The allowed maximum effective output voltage of the transformers must not exceed 18V AC or DC.

The track is connected to terminals **J** and **K** (see Figures 2 and 3).

The Power Station receives command information from the Command Station via terminals **C** and **D**. These terminals are connected to the corresponding terminals on Command Station LZ100 with a 2-wire cable. To reduce radio interface, these wires should be twisted (see Figure 3).

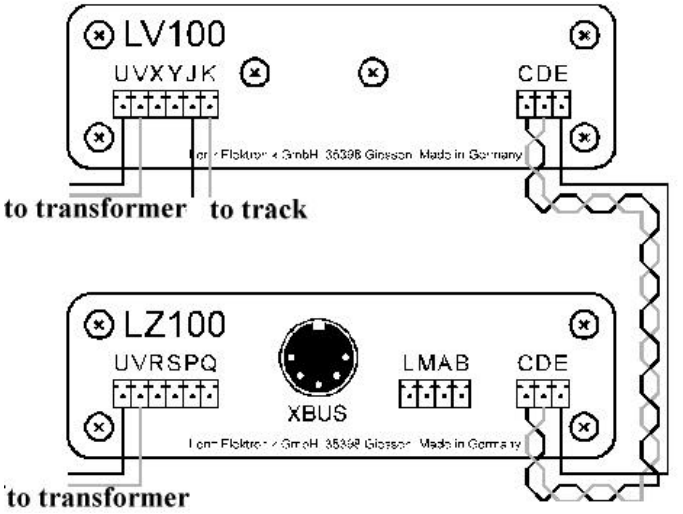

Figure 3: Connecting LV101 to Command Station LZ100

NMRA Conformance Warrant

What does it Mean

Lenz GmbH is proud to be a participant in the NMRA Conformance and Inspection Program. We feel strongly that this is an important program for both the manufacturers and the modeler. As the world wide leader of Digital Command Control products, we are strongly committed to this program. We are proud to have the first advanced decoder to achieve the prestigious NMRA Conformance Warrant.

Why is this program important to you the modeler?

Over the last several years many incompatibilities have occurred between NMRA DCC manufacturers. As a responsible manufacturer, we have tried to insulate you the modeler from these by updating our command station software. However as more manufacturers enter the market and as more products are developed, the incidence and severity of these incompatibilities is much greater. The only practical method for solving this problem long term is to have a independent testing group who both develops tests and performs testing for DCC products. The

NMRA has stepped up to this role providing a service to the both the manufacturers and to the modeler. We support the NMRA in this effort.

Achieving conformance for a product is not easy. Lenz GmbH spent considerable time and money to alter our new products to achieve conformance. However we are most pleased with the results. Our new decoders are more reliable, and work much better with competing brands than could ever have occurred via our testing alone. Our new command station software will now work with all conformant decoders no mater who produces them.

As official company policy. Lenz GmbH has a goal to have all Lenz GmbH products display the NMRA conformance warrant. This will take time. As each product is upgraded, we will redesign it to fully conform to the NMRA requirements.

This promise is yet another indication of the leadership role that Lenz GmbH is providing and is yet another indication of the commitment we have to DCC and to you the modeler.

DIGITAL plus Warrenty

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 engineering 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.

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.

This warranty is not valid if the user has altered, intentionally misused the Digital Plus product, or removed the products 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.

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

Additional Information

Additional information can be found in the manuals for each component. Should you need need more information not contained one of these manuals please contact your DIGITAL plus dealer, factory authorized representive or the DIGITAL plus hotline. Lenz GmbH also maintains a World Wide Web site (http://www.lenz.com) and also provides electronic email support (support@lenz.com). Thank you for purchasing your DCC system from Lenz GmbH. We hope it provides you years of enjoyment in controlling your model railroad.

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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.