The DIGITAL plus GOLD MAXI locomotive decoder is suitable for all DC locomotives with continuous current draw of 3.0 Amp. or less. The characteristics of the decoder are:

* Super smooth and silent high frequency back-emf motor control.
* Supports the industry proposed enhancements to the NMRA DCC Bidirectional data communication RPs
* USP with optional power module for operation on dirty track
* Asymmetrical DCC support including directional stopping
* Adjustable precision stopping control
* Low speed gear for switching operations
* Selectable for operation with 14/27, or 28/128 speed steps.
* Operation on conventional DC layouts is possible or can be disabled.
* Motor output = 3A continuous, 5A max, > 10A stall.
* Motor and function outputs protected
* Eight function outputs rated at 1A each with advanced function mapping
* Directional or independent lighting with dimming and special effects.
* Support for Advanced Consist Control and Extended Addressing
* Support for programming on the mainline (operations mode programming)
* Support for all form of programming as described in NMRA RP-9.2.3
* Supports service mode decoder lock
* Size: L 2.76" x W 1.14"x H 0.47"   70 mm x 29 mm x 12 mm

Gold Maxi Silent-Back EMF DCC Decoder

Art. No 10440
June 2006

*Digital plus
by Lenz* ®
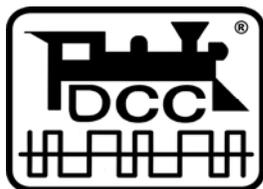
Lenz Gold decoders have received an NMRA C&I warrant. The Gold Maxi decoder has been submitted for independent NMRA testing.

Lenz ELEKTRONIK GMBH

GOLD Decoder feature set

The following contains a short introduction of the features of the GOLD decoder as well as information on how to use them.

For more detailed information please refer to the "GOLD decoder" information which can be downloaded from the Lenz Elektronik GmbH website: www.lenz.com.

Capacity and protection equipment

The motor output has a current-carrying capacity of up to 3 amps without any concern for cooling! The short-term maximum current-carrying capacity is 5 amps. The decoder is protected against overloading, short circuits and overheating. In case of a fault, a bit is set in CV30 which will state the type of fault which has occurred. This bit can be cleared via setting this CV to 0. Because of this protection the Gold decoder can work with motors that have very high stall currents.

The total capacity of the decoder can be increased using a heatsink on the decoders rectifier.

Maximum continuous current-carrying capacity of total decoder	3.0 Amps
Motor output - Continuous / maximum power / Stall	3.0 Amps / 5.0 Amps / NA
Function output A, through G	1 Amp each
Total current-carrying capacity of function outputs	1 Amp

Important safety instructions

Digital plus locomotive decoders are designed to be used only with Lenz Digital plus or other standard NMRA Digital Command Control system. For best performance we recommend systems with an NMRA-conformance seal. If in doubt, ask the system supplier.

Please note that the maximum current-carrying capacity of the outputs may not be exceeded as this could damage the decoder! Under no circumstances may the parts of the locomotive decoder be allowed to touch the metal components of the chassis or the body of the locomotive as this could cause a short-circuit within the locomotive decoder leading to damage.

Never wrap the locomotive decoder in insulating tape as this prevents the necessary air circulation around the decoder. Instead, use insulating tape or something similar around the metal components of the locomotive to avoid unintentional short-circuits without depriving the decoder of air. Use double-sided adhesive-tape to affix the decoder.

Locomotives equipped with Digital plus decoders must not be run using powered overhead lines either on conventional DC control or DCC control systems as this could subject the locomotive to double the voltage and damage the decoder.

The current-carrying capacities noted in the technical data above may not be exceeded.

Before installing a Digital plus decoder, check the locomotive in normal DC operation to ensure that it works correctly before modifying the locomotive.

Replace worn wheel contacts, motor brushes and blown bulbs. Only a locomotive that is mechanically OK will function properly with a locomotive decoder.
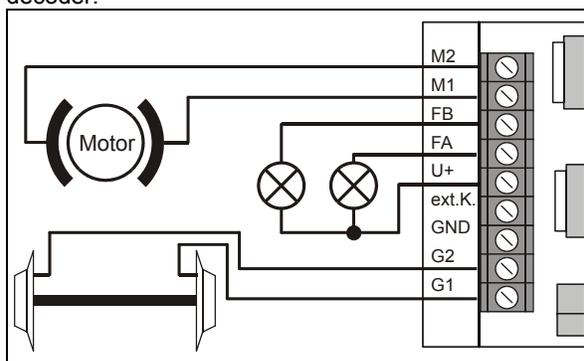
Installing the GOLD decoder

Please note which motor connection is connected to the right rail pickups and which to the left. If you do this, you will not have to try out which of the two motor outputs M1 and M2 of the decoder needs to be connected to which motor connection to set the desired direction of travel. After removing the existing cables, the motor connections must not be connected in any way to the chassis or the rail pickups of the locomotive. Bear in mind that sometimes a connection like this is only made when the chassis is put back! Please contact a service centre if you are in any doubt as to whether all necessary preconditions for the installation are fulfilled!

First connect the decoder to the pickups of the locomotive:

- Input G1 to the right rail pickup
- Input G2 to the left rail pickup

Then connect the decoder to the motor connections:

- Motor output M1 to the motor output previously connected to the right rail pickup
- Motor output M2 to the motor output previously connected to the left rail pickup

Now, connect the function outputs as follows: N0te that the default function settings can be changed using CVs 33-46. The following assume the default settings.

- Function output FA to the front lighting at the front in the direction of travel
- Function output FB to the front lighting at the back in the direction of travel
- Function outputs C-H are connected to F1 to F6
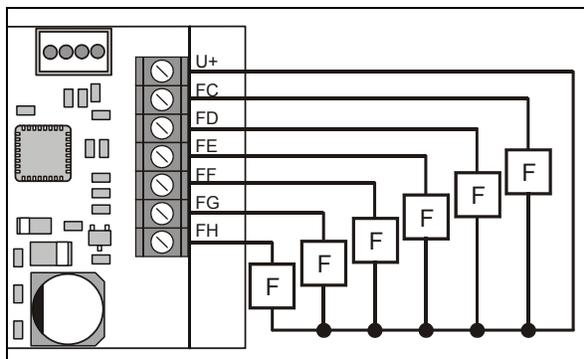
If a connection between the bulbs and chassis exists, the connection of the front lighting is completed. If the bulbs are not electrically connected to the locomotive chassis (we call this 'potential-free'), connect the other pole of the bulbs to the connection U+ of the GOLD maxi (which of the U+ connections is irrelevant). If you do this, the bulbs will shine somewhat brighter and the direction-dependent lighting will also function in DC operation. The variant you choose depends on the design of the locomotive.

When connecting LEDs, make sure that the connection U+ is the 'positive pole' (anode side of the LED) and that the function output is the 'minus pole' (cathode side of the LED). The voltage of the function output is 16 V. Do not forget the required voltage multiplier.

Testing the installation

Place the locomotive on the programming track (without its housing) and read the address. The decoder is programmed from the factory to the address 03. If you have connected the decoder correctly thus far, you should now be able to read the address. If you are not able to do so, it is possible that you have made a mistake when connecting the cables. **Do not subject the locomotive to full running track power until you obtain the correct "03" address read-out**. Check the cable connections and change them as required. You should now be able to send your locomotive on ist first test run on your layout.

Features of the GOLD maxi

The following contains a short survey of the features of the GOLD maxi as well as information on how to set them.

For more detailed information please refer to the "Decoder operating manual" which is available at your hobby shop or can be downloaded from the Lenz Elektronik GmbH website: www.lenz-elektronik.de or www.lenz.com

Protection equipment

The decoder is protected against overloading, short circuits and overheating. In case of a fault, the corresponding bit is set in CV30 which will state the type of fault which has occured. This bit can be deleted via programming.

Motor control

The decoder has a high-frequency control (23kHz). To adapt it to the type of locomotive used, you can choose between six different motor types in CV50. These motor types include parameter sets which have been specially adapted to the respective models. Moreover, it is possible to carry out fine-tuning via CV113 or CV114 when selecting motor types 4 or 5. Of course you can switch off both the high-frequency drive as well as the control system itself. You can still use CV9 to adjust the repeat rate. Note: The factory default is ideal for the vast majority of locomotives in the market.

The minimum (CV2), maximum (CV5) and mid (CV6) speed can be set; the decoder automatically adapts the characteristic speed line dynamically to ensure a steady, smooth curve. Independently of this, it is also possible to program an individual characteristic speed line.

The decoder still has a so-called EMF switch which makes it possible to adjust the decoder to different motor types. Depending on the motor type used, it is possible that a digitally controlled locomotive cannot reach an adequate maximum speed compared to a locomotive in conventional operation. If this is the case, activate your EMF switch by setting Bit 6 in CV 50. The locomotive will then reach a higher maximum speed while the minimum speed is also slightly increased.

Speed Steps

The decoder can be operated in the 14/27 or the 28/128 speed step mode. This setting is made in CV29.

Disabling of delay

Use function 4 (the factory default setting can be altered in CV60) to disable the starting and braking delay as well as the constant braking distance during operation. The delays are disabled as long as the function is active.

Constant braking distance

During the transition from the current speed step to speed step 0 (e.g. by rotating the knob of the LH90 handheld to the left limit-stop), the

Lenz
ELEKTRONIK GMBH

locomotive/train covers a settable, defined braking distance. This braking distance does not depend on the speed of the locomotive/train.

Setting the constant braking distance:

The braking distance is defined by the value set in CV52. Since the motors and gear ratios of locomotives vary, the braking distance differs from locomotive to locomotive even if the same value is set in CV52.

1. Use a short test section to measure how long your locomotive's braking distance will be with a given value set in CV52. Start with the default value (100) in CV52.
2. Enable the constant braking distance function (this requires setting Bit 2 in CV50. If this bit is not set, the decoder will use the speed-dependent braking delay).
3. Accelerate your locomotive until it has reached average speed.
4. At a chosen point in time, set the running notch to 0. This requires moving the turning-knob of the manual controls LH30, LH90 or the *compact* to the left limit-stop; if you are using the LH100, keep pressing the key until the running notch is set to 0 or until the locomotive address is displayed (if using the LH100, do not press key 👁! This results in a locomotive-specific emergency stop and the delays in the locomotive decoder will not be enabled!).
5. Measure the covered braking distance.
6. Increase or decrease the value in CV52, e.g. in steps of 10, and carry out another measurement. You will thus create a table which will show the braking distances in relation to the values set in CV52.

Important braking distance advice:

The constant braking distance is only effective if the running notch is altered to 0. If the running notch is decreased from e.g. 28 to 10, the speed-dependent delay from CV4 becomes effective.

While the shunting speed is switched off (default setting F3), the constant braking distance is disabled and the delay from CV4 becomes effective.

The constant braking distance is also disabled if the delays set in the decoder are disabled by means of the corresponding function.

The two latter features can also be used sensibly if you wish to interrupt a current braking process prematurely.

The constant braking distance does not work if the layout is operated in analogue DC mode.

Shunting speed

The shunting speed halves the speed. This facilitates particularly sensitive control of the shunting process. Use function 3 (From the factory setting, can be altered in CV59) to enable and disable the shunting speed. If the

shunting speed is enabled, the constant braking distance is disabled. The shunting speed is enabled as long as the function is active.

ABC = simple signal stop and slow approach

You can carry out a particularly simple signal stop using the ABC braking module. Depending on the signal position, this module creates an asymmetric track voltage in the braking section in front of the signal. The decoder reacts to this. Combined with the constant braking distance, precise on-the-spot stopping in front of red signals is not a problem. Of course, passage in the opposite direction is also possible. The signal indication "slow approach/caution" does not pose a problem; the respective speed can be set in CV53.

You can operate all functions during the signal stop or slow approach – you can even reverse away again from the red signal! These special ABC modules can be used to assemble a very simple block section. Activate the ABC module by setting Bit 2 (1) in CV51.

The ABC feature is not active whenever the shunting speed is switched on or the delay is disabled.

Push-pull train control

A push-pull train control can be set if the ABC braking module is used. There are two different options: push-pull operation with and without intermediate stops. The latter also takes slow-approach sections into account.

The push-pull train control is activated in CV51, Bit 4 (3) and Bit 5 (4). The stopping time at the end of the track is set in CV54 (1 to 255 sec).

Allocating function outputs to the functions of the digital system (mapping)

You can define which digital function is used to switch function outputs FA to FH on or off. Outputs FA to FC can be mapped to function F0 (direction-dependent) or functions F1 to F8. Outputs FD and FE can be mapped to function F0 (direction-dependent) or functions F1 to F12. Outputs FF to FH can be mapped to functions F4 to F12.

This is allocated in CVs 33 to 46.

Lighting effect at function outputs

The lighting effect for the function outputs A and B is set in CV60 and for the function outputs C and D in CV62. If you wish to switch the effects with a function of the digital system, you can make the allocations to functions F1 to F8 in CV61 (for function outputs A and B) and CV64 (for function outputs C and D). The effects available are shown in the table of the supported CVs further below.

RailCom

The GOLD maxi is equipped with the RailCom function. In addition to the locomotive address, other data (e.g. speed, CV content) can be transmitted from the locomotive via the track back to the system. The information sent is received by a RailCom detector and then displayed. Which data the decoder is to send is set in CV28. Set Bit 4 in CV29 to enable the transmission function.

The S.U.S.I. interface

The sound and function interface concept for locomotive decoders was devised in 2002 in cooperation with the company DIETZ. The purpose of the interface is to facilitate the particularly easy connection of sound and other function modules to locomotive decoders.

The S.U.S.I. module receives information about the running notch, the status of the functions etc. via the interface and reacts accordingly, for example the sound of a bell is played or the locomotive sound changes.

The quality of these sound effects depends solely on the S.U.S.I. module and not on the locomotive decoder!

Connecting a S.U.S.I. module

You may connect all sound and/or function modules to the S.U.S.I. interface that correspond to the interface's specification. There is a socket for the connection of a sound or function module – use it to plug in a suitable S.U.S.I (Abb.3, p 6).

Setting (programming) the S.U.S.I. module

Like locomotive decoders, there are also various ways of setting S.U.S.I. modules. These settings are also saved in configuration variables (CVs). If you wish to change these CVs, proceed as if you wanted to change the CVs of the locomotive decoder. The S.U.S.I. module is programmed "through the decoder" as it were. Based on the number of the CV, the locomotive decoder will know whether the S.U.S.I. module is to be addressed and will transmit the programming commands via the S.U.S.I. module. Please refer to the operating manual of your module to learn about the settings possible for your S.U.S.I. module.

The settings of the S.U.S.I. module can be carried out both through "Programming in operational mode (PoM)" or "Programming on the programming track". When using Digital plus by Lenz $^®$ systems, you can change CVs 1 to 999 with PoM, while "Programming on the programming track" is currently used for CVs 1 to 256. CVs 897 to 1024 have been defined for the S.U.S.I. module. A special programming method has been built into this decoder so that these CVs can be reached.

In this programming method, CV126 functions as an *indicator* and CV127 as a *transport device* for the value.

The function sequence is as follows: The target (number of the CV) is entered in the *indicator* CV126, and the value that is to be transported to the target is entered in the *transport device* CV127. If you only wish to read out the target CV, the *transport device* CV127 is read out after the target is entered in CV126.

Since only values up to 255 can be entered in a CV, but the CVs for S.U.S.I. start at 897, the CV that functions as the *indicator* is preset to 800. All you have to do is enter the difference between 800 and the desired target CV, for example number 97 for the target CV897.

Example 1: You wish to enter the value 01 in CV897 of the S.U.S.I. module. Proceed as follows:

1. Enter 897-800=<u>97</u> in the *indicator* CV126.

2. Enter the desired value "01" in the *transport device* CV127. The decoder passes the programming command "Enter value "01" in CV "897"" via the S.U.S.I. interface to the connected module.

Example 2: You wish to read out the present value of CV902 of the S.U.S.I. module:

1. Enter 902-800=<u>102</u> in the *indicator* CV126.

2. Read out the *transport device* CV127. The value of CV902 of the connected module is displayed.
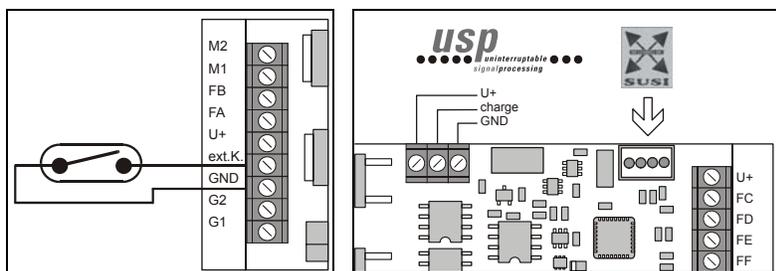
USP – Uninterruptable Signal Processing

In combination with the optional energy storage, the intelligent USP circuit ensures that your locomotive can run even over dirty track sections or dead frogs. The energy storage is not included with this decoder and is installed separately in the vehicle.

Three terminal screws are provided on the decoder for the connection of the energy storage (e.g. Power 1) or a battery circuit.

Signal stop and push-pull control with an external reed contact

The GOLD Maxi has a connection for an external reed contact. The reed contact is installed at the bottom of the locomotive. You can let your

locomotive stop in front of a signal or operate in push-pull operation with the help of a magnet installed in the track. Please see Fig. 4, p. 7 for the connection of the reed contact.

Signal stop

To activate the signal stop via the external reed contact, set bit 7 in CV51.

Function sequence: If the locomotive drives over the magnet installed in the track (reed contact is closed), the locomotive will brake with the delay set in CV4 or the braking distance set in CV52 until it comes to a halt. When the locomotive is to accelerate again, set the speed to speed step 0 and accelerate.

Emergency stop: If a locomotive drives over a second magnet while braking (contact is closed again), it will stop immediately, i.e. without the set delay (or braking distance). This feature can be used as a kind of 'INDUSI' by using an electronic magnet as second magnet which is only active when the corresponding signal indicates 'stop'.

Push-pull (shuttle) train control

To activate the push-pull control via the external reed contact, set bits 7 and 8 in CV51. In addition, set the desired stopping time in CV54. You need a track magnet to activate the reed contact at each end of the push-pull section.

Function sequence: If the locomotive drives over the magnet installed in the track (reed contact is closed), the locomotive will brake with the delay set in CV4 or the braking distance set in CV52 until it comes to a halt. When the stopping time set in CV54 has elapsed, the locomotive will accelerate into the opposite direction. Passage over the first magnet (which triggered the braking procedure) is ignored. The locomotive will continue until it reaches the magnet at the end of the push-pull section. There, the locomotive will brake again, wait for the set stopping time to elapse, change ist direction of travel, and continue in this direction – and the game starts all over again.

Programming the decoder

The locomotive address, acceleration and deceleration delay, and all other features of the locomotive decoder can be changed as often as desired by reprogramming the decoder. The features are "stored" permanently in special locations even when the operational voltage is switched off. These locations are called "configuration variables" or simply "CV". The values are configured electronically, which means that it is not necessary to open the locomotive again after the decoder has been installed.

The Gold Maxi decoder supports all forms of NMRA defined service mode programming. To program a Gold Maxi decoder you will need a system capable of service mode programming (such as Set-90 or Set-100). Please note that not all systems support the programming of all CVs.

You can also alter the content of CVs both through "Programming in operational mode (PoM)" (except for CV1, CV17 and CV18) or "Programming on the programming track".

For detailed instructions on how to program using the above-mentioned devices, please refer to the operating manuals which accompany those devices.

The factory default for the decoders address is address 3 running in 28 speed step mode. The decoder can be used with these basic configurations immediately after purchase. All configurations can, of course, be changed at any later date.

Resetting the decoder

If you wish to reset all the decoder CVs to the factory default setting, enter value 33 or a value of 8 in CV8. *The CVs of a connected S.U.S.I. module are not reset!*

Table of supported CVs

CV	Value / Bit	Meaning	Factory default setting
1	1-127	Basic locomotive address. This number is used to call up locomotives in the Digital plus by Lenz ® system. The use of range 1-99 is recommended for operation with Digital plus by Lenz® devices. When writing this CV, CV19 (multiple traction address) is automatically deleted in the decoder and Bit 6 (use of extended address) is deleted in CV29.	3
2	0-255	Minimum starting voltage	0
3	0-255	Starting delay	6
4	0-255	Braking delay	5
5	0-255	Maximum speed	254
6	0-255	Mid speed Vmid	48
7	-	Version number	72
8	-	Manufacturer's ID	99
9	0-63	Motor drive frequency	10
17	192-231	Extended locomotive address, high-order byte	192
18	0-255	Extended locomotive address, low-order byte	100
19	1-99	Multiple unit (consist) address	0
28	Bit	RailCom configuration	7(dec)
	1 (0)	1 channel 1 release for address broadcast	1
	2 (1)	1 channel 2 release for data	1
	3 (2)	1 channel 1 release for command acknowledge	1
29	Bit	Settings 1	6 (dec)
	1 (0)	Direction of travel 0 normal: locomotive drives forward if the arrow on the manual control points up. 1 interchanged: locomotive drives forward if the arrow on the manual control points down.	0
	2 (1)	Speed Step Mode: 0 Operation with 14 or 27 running notches. This setting is chosen for digital systems which do not support the 28 speed step mode. 1 Operation with 28 or 128 speed steps. This setting is chosen for digital systems which support the 28/128 speed steps.	1
	3 (2)	DC Operational mode: 0 Locomotive only runs in digital operation. 1 Locomotive runs both in digital and conventional DC operation.	1
	4 (3)	0 RailCom transmission disabled 1 RailCom transmission enabled	0
	5 (4)	0 Factory pre-set speed curve is used 1 User defined speed curve is used	0

	6 (5)	0 Decoder uses basic address (from CV1)								0
		1 Decoder uses extended address (from CV17 and CV18)								
	7-8(6-7)	Not used								0
30	Bit	Error Fault Code display								0 (dec)
	1 (0)	1 Light short-circuit								0
	2 (1)	1 Overheating								0
	3 (2)	1 Motor short-circuit								0
CV 33 – 46	Range of values	Function mapping for function outputs: In order to allocate a function of the digital system to a function output, look for the section where the row of the desired function meets the column of the desired function output. Enter the number found in the respective CV. For the purpose of clarification, From the factory settings are shown in bold print.								Factory default setting

CV		Function output:	A	B	C	D	E	F	G	H	
33	0-255	F0 forward	**8**	16	32	64	128				
34	0-255	F0 backward	8	**16**	32	64	128				
35	0-255	Function 1	8	16	**32**	64	128				
36	0-255	Function 2	8	16	32	**64**	128				
37	0-255	Function 3	8	16	32	64	**128**				
38	0-255	Function 4	1	2	4	8	16	**32**	64	128	
39	0-255	Function 5	1	2	4	8	16	32	**64**	128	
40	0-255	Function 6	1	2	4	8	16	32	64	**128**	
41	0-255	Function 7	1	2	4	8	16	32	64	128	
42	0-255	Function 8	1	2	4	8	16	32	64	128	
43	0-255	Function 9				1	2	4	8	16	
44	0-255	Function 10				1	2	4	8	16	
45	0-255	Function 11				1	2	4	8	16	
46	0-255	Function 12				1	2	4	8	16	

50	Bit	Motor configuration		3 (dec)
	1-4 (0-3)	Select motor type 0-5, enter as decimal number		3 (dec) bit 3=1
	6 (5)	0 EMF switch inactive		0
		1 EMF switch active		
	7 (6)	0 Control switched <u>on</u>		0
		1 Control switched <u>off</u>		
	8 (7)	0 High-frequency motor control (approx. 23 kHz)		0
		1 Low-frequency motor control (approx. 19 Hz)		
51	Bit	Braking configuration		0 (dec)
	1 (0)	1 Constant braking distance activated		0
	2 (1)	1 ABC activated		0

	3 (2)	1	ABC direction-dependency <u>dea</u>ctivated	0
	4 (3)	1	Activate push-pull operation without intermediate stop	0
	5 (4)	1	Activate push-pull operation with intermediate stop	0
	6 (5)	1	Stopping with DC independent of the polarity (only if Bit 3 is deleted in CV29).	0
	7 (6)	1	Signal stop activated with external contact	0
	8 (7)	1	Push-pull operation activated with external contact	0
52	0-255		Braking distance with activated constant braking distance	50
53	0-255		Slow approach with ABC	48
54	0-255		Stopping time in push-pull operation, 1 to 256 sec	4
55	0-255		Sets brightness at function outputs A and C, 255=max	255
56	0-255		Sets brightness at function outputs B and D, 255=max	255
57 - 59			Function mapping: Each bit of the CV stands for a function of the digital system: Bit 1(0) for function 1, Bit 2(1) for function 2 and so on up to Bit 8(7) for function 8. If you wish to allocate a function to the dimming, the respective bit must be set.	
57	0-255		Dimming (no From the factory setting)	0
58	0-255		Shunting speed (From the factory setting F3)	4
59	0-255		Switching off the delay (From the factory setting F4)	8
60	0-255		Lighting effect at function outputs A and B. The units digit of the value stands for function output A, the tens digit for function output B: 0 No effect 1 Marslight 2 Gyrolight 3 Strobe 4 Double strobe	0
61	0-255		Function mapping: lighting effect at function outputs A and B	0
62	0-255		Lighting effect at function outputs C and D.	0

For CV 62, the effect descriptions:

The tens digit of the value stands for function output D:	The units digit of the value stands for function output C:
0 No effect	0 No effect
1 Flashing at same time as function output C	1 Flashing
2 Flashing alternately to function output C	2 Flickering type 1 (smooth)
3 Flickering type 2	3 Dimming with value from CV55

		(less smooth) 4 Flickering type 3 (excitedly) 5 Dimming with value from CV56	
63		Flashing frequency for function outputs C and D: default approx. 1 sec, f = 1 / (0.03 * (1 + CV63))	32
64		Function mapping: lighting effect at function outputs C and D	0
67..94	0-255	Values for characteristic speed line, default = From the factory speed line	
105	0-255	User Identification #1	255
106	0-255	User Identification #2	255
112	0-255	Duration of motor timeout when track signal has stopped. t = CV112 * 0.016sec, default approx. 0.25 sec	16
113	0-255	Minimum PWM value, control for motor types 4 or 5	30
114	0-255	Change duty cycle for motor type 4 or 5	10
115	6-30	Asymmetrical DCC sensitivity	12
126	0-255	CV (*indicator*) for S.U.S.I., offset 800	102
127	0-255	CV (*transport device*) for S.U.S.I.	0
128		Service number (Please read out the number)	-2

North American 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 manufacturer's 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 manufacturer's 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 manufacturer's 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.

Hüttenbergstraße 29
35398 Gießen, Germany
Hotline: 06403 900 133
Fax: 06403 900155
info@digital-plus.de

Lenz
ELEKTRONIK GMBH
http://www.lenz.com

Lenz Agency of North America
PO Box 143
Chelmsford, MA 01824
ph: 978 250 1494
fax: 978 455 LENZ
support@lenz.com

C€ Please save this manual for future reference!