

Even more reasons for buying a Digital plus locomotive decoder...

Digital
— plus
by Lenz





Firstly: "You should buy the original!"

There is a wide range of locomotive decoders available on the market. Those trying to gain an overview should know that - to be on the safe side - it is always better to go for the original. And the original is by Lenz Elektronik GmbH. Lenz Elektronik is the inventor of the DCC format which became an NMRA standard as early as in 1996. Lenz Elektronik not only laid the foundation for the global DCC standard, but also developed a series of groundbreaking technologies, e.g. the ABC technology for easy and precise stopping in front of signals, the intelligent USP circuit for uninterrupted communication between command station and decoder, and the RailCom function for bidirectional information exchange.

Here is why you should go for the original:

ABC = Easy signal stop and slow-motion operation

All Digital plus decoders understand the signals of ABC modules. The use of ABC modules facilitates particularly easy and — in combination with the constant braking distance — precise stopping in front of signals. Of course, passage in the opposite direction is possible.

Adress range

All Digital plus decoders support 2 or 4-digit addresses. Addresses range from 1 to 9,999 (address 0 is reserved for conventional locomotives operating in the digital system).

Analog/digital detection

All Digital plus decoders detect automatically whether they are part of an analogue or a digital system. This enables a quick change between analogue and digital system sections.

Starting and braking delay

The starting delay and the braking delay can be set independently of each other. If desired, these delays can be enabled and disabled in the digital system via a function by simply pressing a push-button.

Double/Multiple traction

All Digital plus decoders support double and multiple traction.

Speed steps

14, 27, 28 or 128 speed steps are available.

Function outputs

Function outputs can be assigned in multiple ways to the functional keys of the digital system. Outputs can be time-controlled and therefore used e.g. for the coupling function. Outputs can be freely assigned to the function keys of input devices.

Constant braking distance

This feature ensures a speed-independent constant braking distance. This is important for automatic stopping sections.

Performance

We state a continuous load for the motor outputs of all Digital plus decoders. The continuous load is achieved without mounting on cooling plates!

Light effects

A variety of light effects can be set at the four function outputs. Two are dependent on the direction of travel:

- ✓ Brightness (dimming) - can also be switched via a function
- ✓ Mars light
- ✓ Gyra light
- ✓ Flash and double flash
- ✓ Various settings for random flickering (ideal for the fire box of a steam locomotive)
- ✓ Blinking

Motor control

The high-frequency motor control adapts automatically to the respective motor. Should further adaptations be required different motor types can simply be selected depending on the model. These motor types contain sets of parameters that have been adapted to the respective model. Furthermore, it is also possible to carry out a fine tuning via CVs. Of course, both the high-frequency drive and the control can be switched off.

Push-pull train control

The use of ABC braking modules facilitates a push-pull train control. There are two different options: Push-pull with or without intermediate stop. The latter also takes slow-motion sections into account. The stopping time at the end of the track is set at between 1 and 255 seconds via a CV.

Programming

All Digital plus decoders can be programmed in PoM mode (i.e. on the layout track) as well as on the programming track. Most features can even be changed during operation.

Vmin, Vmid, Vmax

The minimum, maximum, and medium speed can be set. The decoder adapts the characteristic speed line dynamically to ensure a smooth run without bends. It is also possible to program an individual characteristic speed line.

The new **SILVERmini+ V2** and **GOLDmaxi+ V2** offer:

- ✓ Vmax separately adjustable for forward and reverse travel. This allows true to the original speed especially at tender and towing locomotives, without having to adjust this on the hand controller: the predefined speed fits according to the direction.
- ✓ Vmax separately adjustable for shunting.
- ✓ Operating hours counter, very useful for maintenance intervals.

Later this year, these options will also be available as an **update** to all other Digital plus decoders.

Secondly: Only Digital plus locomotive decoders are capable of

Key features	STANDARD + V2	SILVERmini + V2 **	SILVERmini + V2 **	SILVER + PluX12	SILVER + PluX22	SILVER + Next18	SILVER + 21	SILVER + direct	GOLDmini +	GOLDmini +	GOLD +	GOLDmaxi + V2 **
Free assignment of function outputs to function keys	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ABC - automatic stopping in front of signals	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
USP - uninterrupted data transfer to the decoder		✓	✓						✓	✓	✓	✓
S.U.S.I. - Interface		✓	✓	✓	✓						✓	✓
Push-pull train control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection	NEM652	Kabel	NEM651	PluX12 (NEM 658)	PluX22 (NEM 658)	Next18 (NEM 662)	21 polig (NEM 660)	NEM652	Kabel	NEM651	NEM652	***
Motor - continuous current (A)	1,0	0,5	0,5	0,75	0,75	0,75	1,0	1,0	0,5	0,5	1,0	4,0
Function outputs:	Maximum load (mA):											
A and B - each	150*	***	***	500		500	500	500	100	100	500	***
C	150*	***	***	500		500	500	500			500	***
D and E - each	nur D: 150*			nur E: 500		500	500	500			500	***
F, G and H, each												***
Maximum continuous load of the entire decoder (mA):	1.000	***	***	750	750	750	1.000	1.000	500	500	1.000	4.000
Dimensions W x H x D in mm	25 x 15 x 3,8	***	***	11 x 20 x 4	22 x 15 x 5	15 x 9,5 x 2,9	20,6 x 15,7 x 4,0	19,2 x 13 x 3,6	11 x 9 x 2,8	11 x 9 x 3,3	22,9 x 17 x 4,9	***
Article no	10231-02	10310-03	10311-03	10312-01	10322-01	10318-01	10321-01	10330-01	10410-01	10411-01	10433-01	10440-01

* When using LEDs, when using light bulbs 30 mA each | ** under development | *** not yet fixed at the time of printing

NMRA conform

All Digital plus decoders correspond to the NMRA standard.

Shunting mode

The shunting mode halves the current speed. It can be switched via a function. This facilitates smooth shunting.

SUSI interface

Sound and function modules which support this interface can be connected via the SUSI interface.

USP

The intelligent USP circuit in combination with the optional energy storage ensures that your locomotive can run over dirty track sections and dead frogs. The energy storage is installed separately in the vehicle.

Overload protection

Protection against overload, short circuits and over-temperature.

RailCom

All Digital plus decoders are equipped with RailCom. RailCom facilitates the transmission of the locomotive address and other data (e.g. speed, CV contents) by the locomotive via the track and subsequent displaying. The RailCom function is factory set.

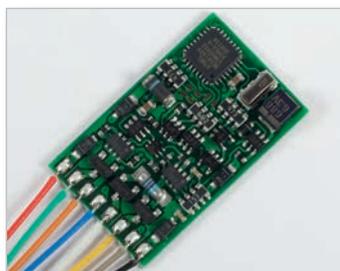
Thirdly: STANDARD+ V2

For model railway fans who want to operate only digitally our locomotive decoder STANDARD+ V2 is the right choice. Despite its reasonable price it has been equipped with all the features which are nowadays considered as a standard for DCC locomotive decoders - hence the name. The STANDARD+ V2 is RailCom and ABC-able. It is fitted on one side only, making for an extremely flat design that considerably facilitates installation.

The new STANDARD+ V2

- ✓ The Standard+ V2 is now ABC-able. Because that is our standard
- ✓ RailCom function factory-set
- ✓ High-frequency motor control
- ✓ Motor current 1 A
- ✓ Three function outputs
- ✓ Outputs short-circuit protected
- ✓ Operation with 2 and 4-digit addresses
- ✓ Multiple traction
- ✓ Automatic detection of analogue/digital operation
- ✓ Shunting mode
- ✓ Connecting cable with NEM652 plug

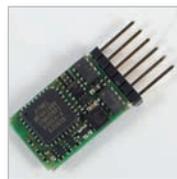
You really should not ask for less than the new standard!



Locomotive decoder STANDARD+ V2



Locomotive decoder SILVER+ mini



Fourthly: SILVER+

Allrounder: RailCom, ABC-technology, mit interface variety. **The new SILVERmini+ V2 even come with a S.U.S.I interface, with integrated unique USP circuit and with a connection for our POWER module. Vmax separately adjustable for forward and reverse travel and shunting.***

Models of the SILVER family

SILVER+ 21 High-performance decoder with 21-pin interface connector (NEM 660) on the board, therefore particularly space-saving.

SILVER+ mini V2 Even smaller but with S.U.S.I interface, USP and connection for the POWER1. Four function outputs. Vmax separately adjustable for forward and reverse travel and shunting. Operating hours counter.

SILVER+ direkt For locomotives equipped with an 8-pin NEM 652 interface. The decoder pins are located directly on the circuit board so that the decoder can be simply plugged onto the interface. It does not get any easier. Due to its small dimensions the decoder can be easily installed in a variety of locomotive.

SILVER+ PluX12 Our tried-and-tested SILVER+ is now available with 12-pin PluX plug (NEM 658)! It combines the advantages of the SILVER+ decoder with those of the PluX interface. By the way: The SILVER+ PluX12 is particularly interesting for TT users, but not only because of its compact design: We have also stored some specific settings for Tillig TT locomotives in the decoder. A single input in CV8 suffices to enable many Tillig-typical functions.

SILVER+ PluX22 the proved and tested SILVER+ decoder with 22-pin PluX plug. Features and characteristics are, of course, identical with those of our SILVER+.

SILVER+ Next18 (NEM 662) (NEM 662) Because of its small dimensions this decoder is particularly suitable for small gauges (N and TT) and smaller HO locomotives. The Next18 requires as little space as the 6-pin NEM 651 interface and still offers up to 7 function outputs.

Fifthly: GOLD+

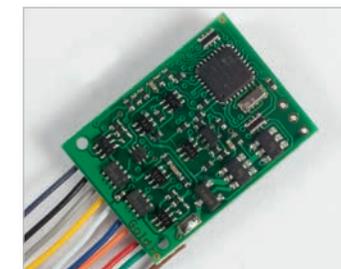
The GOLD+ series locomotive decoders revolutionised model railway technology. Now we have improved them even further! From now on, the optimised software allows for the time-controlled switching of function outputs, e.g. for couplings. And our top model GOLD+ received an additional function output that can be loaded up to 500 mA. The GOLD+ decoders are the state-of-the-art among DCC decoders

Models of the GOLD family

GOLD+ d+ Our top model. It features RailCom (the function is factory-set), the unique USP circuit, a S.U.S.I. interface and the convenient ABC technology.

GOLD+ mini Great for small locomotives. Either with cable or NEM 651 connector.

GOLDmaxi+ V2 for the large gauges. **New development, max. continuous load 4A, integrated POWER storage, 12 function outputs, operating hours counter, Vmax separately adjustable for forward and reverse travel and shunting.*** Of course, still featuring ABC, USP, Railcom and S.U.S.I. interface.



◀ Lokdecoder GOLD+

▼ SILVER+ PluX12 in einer Tillig TT-Lok



*Later this year, these options will also be available as an update to all other Digital plus decoders!

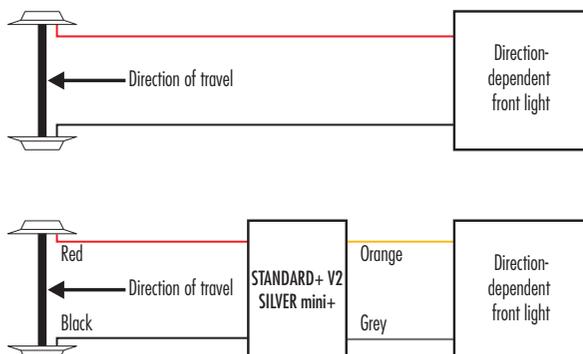
Function? Clever!

Innovative solutions

Why buy a function decoder? The operating mode of our STANDARD+ and SILVER mini+ decoders can be easily switched from locomotive decoder to function decoder.

In the operating mode "locomotive decoder" the motor outputs react to the speed step and direction of travel. In the operating mode "function decoder" the motor outputs do not react to the speed information received (which would make the light intensity dependent upon the speed step), but to a function key: If the function is active full voltage will be transmitted and the polarity will be dependent upon the direction of travel.

This makes the use e.g. in control cars with direction-dependent front light a child's play! Clever and simple!



Connection diagram for the STANDARD+ V2 and SILVER+ mini locomotive decoder if used as function decoder.



Sixthly: Contact problems? Solved!

Unique features of the USP

The intelligent USP circuit in combination with the optional energy storage ensures fault-free and uninterrupted communication between locomotive decoder and command station even in case of dirty track sections or dead frogs.

What is unique about USP:

USP stands for "uninterruptable signal processing". This is based on a clever invention.

Our intelligent USP circuit can do what standard storage capacitors cannot: Digital plus decoders equipped with USP receive all commands from the digital system even in case of contact problems between locomotive and track which would cause locomotives without USP to stop. In this case (and only in this case) the USP storage module (Power1 or Power3) supplies the power required to continue operation or to execute new commands. Despite a track section with contact problems or a locomotive with poor power consumption you will be able to e.g. stop, change the speed, switch functions or change the direction of travel.

The energy of the storage module will only be called up if the USP circuit detects that the track contact has been erroneously interrupted and not if e.g. the locomotive enters a track section without power supply or is removed from the track. That is intelligent.

And that is what only the Digital plus decoders can do.

USP storage modules:

The **Power1** is the USP energy storage module for connection to the GOLD series decoders and SILVERmini-V2. Its compact design allows for installation in a variety of locomotive models.



Digital plus USP storage module POWER 1, Art. no. 10490
Dimensions ca. 22 x 13,3 x 9,4 mm

The **Power3**: Particularly suitable e.g. in combination with the GOLD maxi for use as an energy storage in large gauges.



Digital plus USP storage module POWER 3 - Art. no. 10493
Dimensions ca. 32 x 10,6 x 25 mm

Seventhly: Isn't this is how you always wanted to stop in front of signals...:

In combination with Digital plus decoders ABC achieves with little effort exactly what model railway fans want: Precise stopping in front of signals and passage into the opposite direction.

While in a track section supplied with asymmetrical digital voltage the locomotive remains fully controllable: Functions can be switched, programming during operation (PoM) is possible, reversing away from a signal is possible, shunting with closed signal is possible, and running over section points does not cause short circuits.

Braking module BM1

The track voltage can be channelled to the braking section in front of the signal via the BM1. If the signal is set to "stop" the BM1 will generate an asymmetry in the otherwise symmetrical digital voltage. Digital plus decoders detect this. This results in a soft braking of the train until it comes to a complete stop either with the set braking delay or the set braking distance.



Braking module BM1, Art.no. 22600
Dimensions: 27,5 x 31,5 x 12 mm

If the train approaches from the opposite direction it will simply continue since detection of the asymmetry is dependent upon the direction of travel (the decoder will detect – depending on the direction of travel – if the asymmetry renders the digital voltage more "positive" or more "negative"). If the signal switches to "run" the BM1 will be bridged by the signal switch and the train will accelerate with the speed set in the decoder.

Braking module BM2

The BM2 facilitates the stopping of trains in front of signals; alternatively, it facilitates the creation of a slow-motion section. For the use of the BM2 the section in front of the signal is divided into a driving section and a braking section. The length of the driving section must be sufficient to accommodate the entire train.

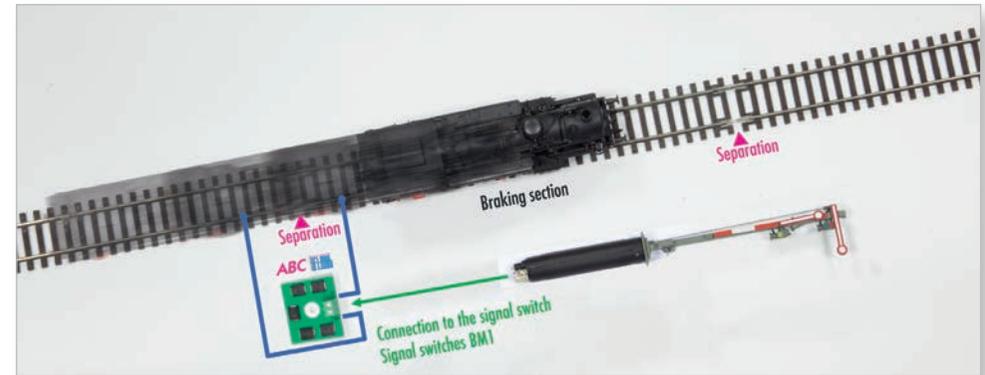
The length of the braking section depends upon the set braking delay or the set braking distance (as with the BM1).

The driving and the braking sections are supplied by the respective outputs of the BM2. For the BM2 "to know what it has to do" the control input of the BM2 is switched in parallel with the red bulb of the signal. If the signal indicates "stop" the red light of the signal will shine.

For the BM2 to influence also pushed trains the lead car of the pushed train must be equipped with a current consumer.

This can be realised by installing a light in the car. This way, the control car will receive front and rear lights that change with the direction of travel.

While the train enters the driving section symmetrical digital voltage is applied to the section. As soon as the train reaches the stopping section the BM2 will detect this and supply asymmetrical digital voltage to the driving and braking sections. The locomotive decoder reacts to this and triggers a

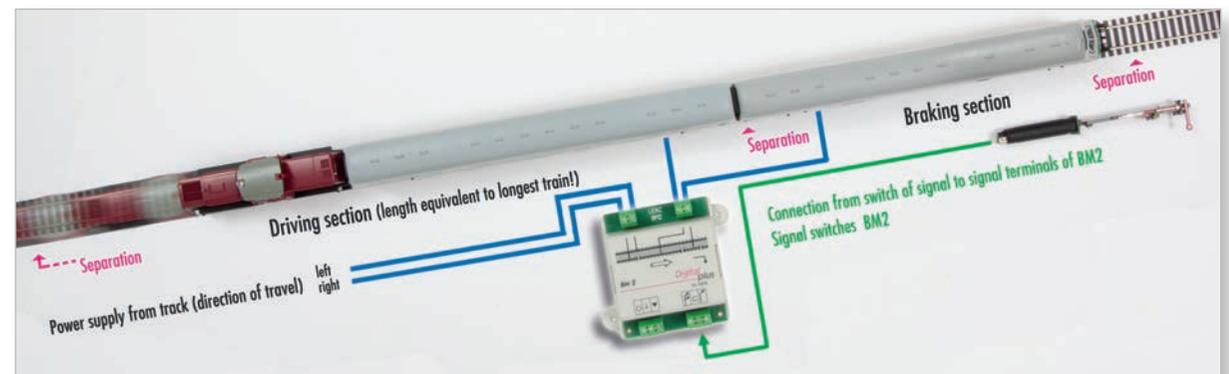


stop of the train after the set braking distance.



Braking module BM2, Art.no. 22610
Dimensions: 53 x 60 x 20 mm

The BM2, too, ensures that driving through the section in the opposite direction will not trigger a braking process.



Eightly: Hello Loco? ... Hello engine driver!

Block section module BM3

The BM3 corresponds to the BM2 only that a block section function has been added. This facilitates life-like block section operation. The number of blocks is unlimited, because a BM3 is used for each block.

The BM3 has two outputs to which light signals can be directly connected. The BMA adapter (see below) is required to control drives with double coils (or motors).



Block section module BM3, Art.no. 22620
Dimensions: 53 x 60 x 20 mm

BMA adapter

If you want to connect the BM3 block section module to signals with double-coil or motor drives you will need a BMA adapter.



BMA Adapter, Art.no. 22630
Dimensions: 33 x 19 x 12 mm

On this layout a BMA module ensures precise stopping at the home signal of the fiddle yard



Good news

The times when data were transmitted into only one direction are long gone. Even without a PC and elaborate switching tricks a locomotive should be able to transmit information back to the command station and therefore to the operator.

That is why all our Digital plus decoders are RailCom-able. Because this is our standard.

But: Older locomotives without RailCom-able decoders do not have to do without the advantages of RailCom. The solution is the RailCom transmission module LRC100 which measures only 11 x 9 x 1.5 mm and fits into almost any locomotive.

Show yourself!

Our gauge 0 exhibition layout shows what RailCom can do. We installed two address displays LRC120 in the front wall of Krakow train station. These displays show the addresses of the locomotives currently located on the two platforms – the locomotive with address 100 is located on track 1, probably a V 100 ...

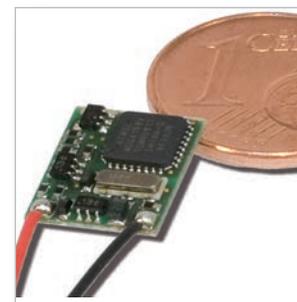
Requirements for the use of RailCom

Only the LZV100 command station/amplifier, a LZ100 command station from version 3.5 onward in combination with a LV102 amplifier or a LV102 amplifier as stand-alone device fulfil the technical requirements for the use of RailCom.

The reason for this is the "blanking gap" in the data stream to the track which can only be generated by the amplifier of the LZV100 or the LV102 amplifier.

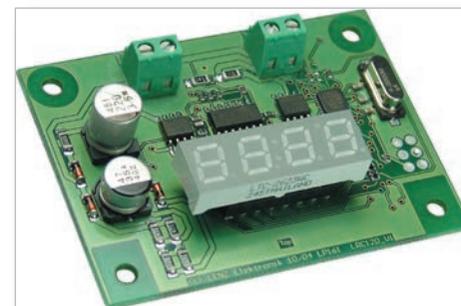
Requirements for the use of ABC

Requirements for the use of the BM1, the BM2, and the BM3 block section module are locomotive decoders which support ABC as well as suitable amplifiers (LZV100, LV101, and LV102).



RailCom transmission module LRC100
Art.no. 15105

Dimensions: 11 x 9 x 1,9 mm



RailCom address display LRC120

Art.no. 15120
Dimensions.:
45 x 62 x 12 mm

Address displays LRC120 in the front wall of Krakow train station



More for model railway enthusiasts. By Lenz:

Digital plus by Lenz

New manual Control LH101

Coming with sensitive and precise turning knob and with a well readable backlit display. Also with many new features such as: different modes for driving and shunting, storable pre-set routes, different modes for club-use, offering limited options for unexercised teammates.

We have adopted proven features. Wherever possible and useful we improved, e.g. 9.999 addresses are available now. Depending on your command station you can operate up to 1024 magnetic accessories such as points and signals. Each of the 29 functions can be operated as either permanent or temporary function. Of course, the new LH101 allows programming on main as well as on programming track.

In combination with our new command station LZV200 the LH101 will be available as SET101 - your entrance into professional digital model railroading.

Modell plus by Lenz

A multitude of functions in 1:87

Modell plus is an H0 model series by Lenz Elektronik GmbH.

What is unique about this series is the possibility to use features in conventional operation which have hitherto been reserved for digital operation.

This is made possible by the integrated development of mechanism and electronics. An electronic module is not simply installed in a model. As early as during the design phase of a model, constructive measures are taken for the successful and economic use of state-of-the-art electronics. During the development phase the interplay between mechanics and electronics is optimised. The result are models that offer an unprecedented functionality in analogue and digital operation at a low-cost price.

We guarantee that. For 6 years.



Digital plus products of Lenz Elektronik GmbH are characterized by outstanding quality. Therefore we grant you as consumer a 6-year manufacturer's warranty on these items from date of purchase of the product. The guarantee applies throughout Europe. More: www.lenz-elektronik.de/digitalplus-garantie.

Lenz O

Simply great: Gauge 0 by Lenz

A few years back we woke the fabulous gauge 0 from its deep slumber and revived it. Today we offer a comprehensive gauge 0 programme and the gauge 0 fan club is steadily growing. You do not have to own a hall to live your gauge 0 dream. Real-life scenes and processes can also be depicted on small layouts.

Those who have had the opportunity to admire the highly detailed models in action know what model railways in gauge 0 can do. We facilitate the introduction: The StartSETS contain everything required for gauge 0 fans: locomotive, cars, and tracks. StartSETS with the digital control SET10 Lenz 0 Edition also contain a command station, manual control, and even two ABC modules. Of course, gauge 0 offers all Digital plus advantages e.g. ABC, RailCom, and USB.

Isn't that great?! Take a look: www.lenz-elektronik.de

Awesome!

Lenz Spur 0 represents exactly the right scale to build a true-to-life model railroad at a price-performance-ratio that unhesitating can be called unrivalled good.



Back of our new control station LZV200

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