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Littfinski DatenTechnik LS-DEC-OEBB-F Light Signal Decoder Instruction Manual

Littfinski DatenTechnik (LDT)
Operating Instruction
Light-Signal Decoder for LED light-signals
from the Digital-Professional-Series !
LS-DEC-OEBB-F Part-No.: 511012
>> finished module <<

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LS-DEC-OEBB-F Light Signal Decoder

Suitable for the digital systems:

Marlin-Motorola and DCC For the direct digital control of:

⇒ up to four 2- or 3-aspect signals

⇒ up to two 7-aspect signals (home- and advance signal on one signal post)

⇒ for LED light signals with common anodes or common cathodes

Realistic operation of the signal aspects by implemented dimming function and a short dark phase between the switching of the signal aspects.

This product is not a toy! Not suitable for children under 14 years of age!

The kit contains small parts, which should be kept away from children under 3!

Improper use will imply danger of injuring due to sharp edges and tips! Please store this instruction carefully.

Label:
orange point
or ÖBB

4 038264 024216

Introduction/Safety instruction:

You have purchased the Light-Signal Decoder LS-DEC-OEBB for your model railway as a kit or as finished module.

The LS-DEC is a high quality product that is supplied within the Digital Professional-Series of Littfinski DatenTechnik (LDT).

We wish you having a good time using this product.

The Light-Signal Decoder LS-DEC of the Digital-Professional-Series can be easily operated on your digital model railway.

By using a connector plug bridge you can choose if you want to connect the decoder to a Marlin-Motorola system or to a digital system with DCC standard.

The finished module comes with 24 month warranty.

- Please read the following instructions carefully. Warranty will expire due to damages caused by disregarding the operating instructions.

  LDT will also not be liable for any consequential damages caused by improper use or installation.

- Also, note that electronic semiconductors are very sensitive to electrostatic discharges and can be destroyed by them. Therefore, discharge yourself before touching the modules on a grounded metal surface (e.g. heater, water pipe or protective earth connection) or work on a grounded electrostatic protection mat or with a wrist strap for electrostatic protection.

- We designed our devices for indoor use only.

Connecting the decoder to your digital model railway layout:

- Attention: Before starting the installation-work switch-off the layout voltage supply (switch-off the transformers or disconnect the main supply).

The Light-Signal Decoder LS-DEC is suitable for the DCC data format as used e.g. by Lenz-Digital Plus, Rocco-Digital (switching via Keyboard or multimaps' only; switching via Lokmas 2® and R3® is not possible), Zima, LGB-Digital, Intellirocks, TWIN-CENTER, Dictation, Eco's, EasyControl, Kenco-DC and Arnold-Digital / Marlin-Digital= whenever no connector plug bridge is inserted in position J2.

The decoder is suitable for Marlin-Digital~ / Murklins Systems or Marlin-Motorola (e.g. Control-Unit, Central Station, Intellirocks, Dictation, Eco's, EasyControl, Keyon-MM) if you insert a connector plug bridge on J2.

The decoder receives the digital information via the clamp KL2.

Connect the clamp with a rail or even better connect the clamp to an own digital main ring supply assuring the supply of digital information free from any interference.

Please attend to the marking on clamp KL2. The colors 'red' and 'brown' next to the clamp are usually used by Marlin-Motorola systems (e.g. Marlin-Digital~ / Murklins Systems / Intellihot Dictation / EasyControl).
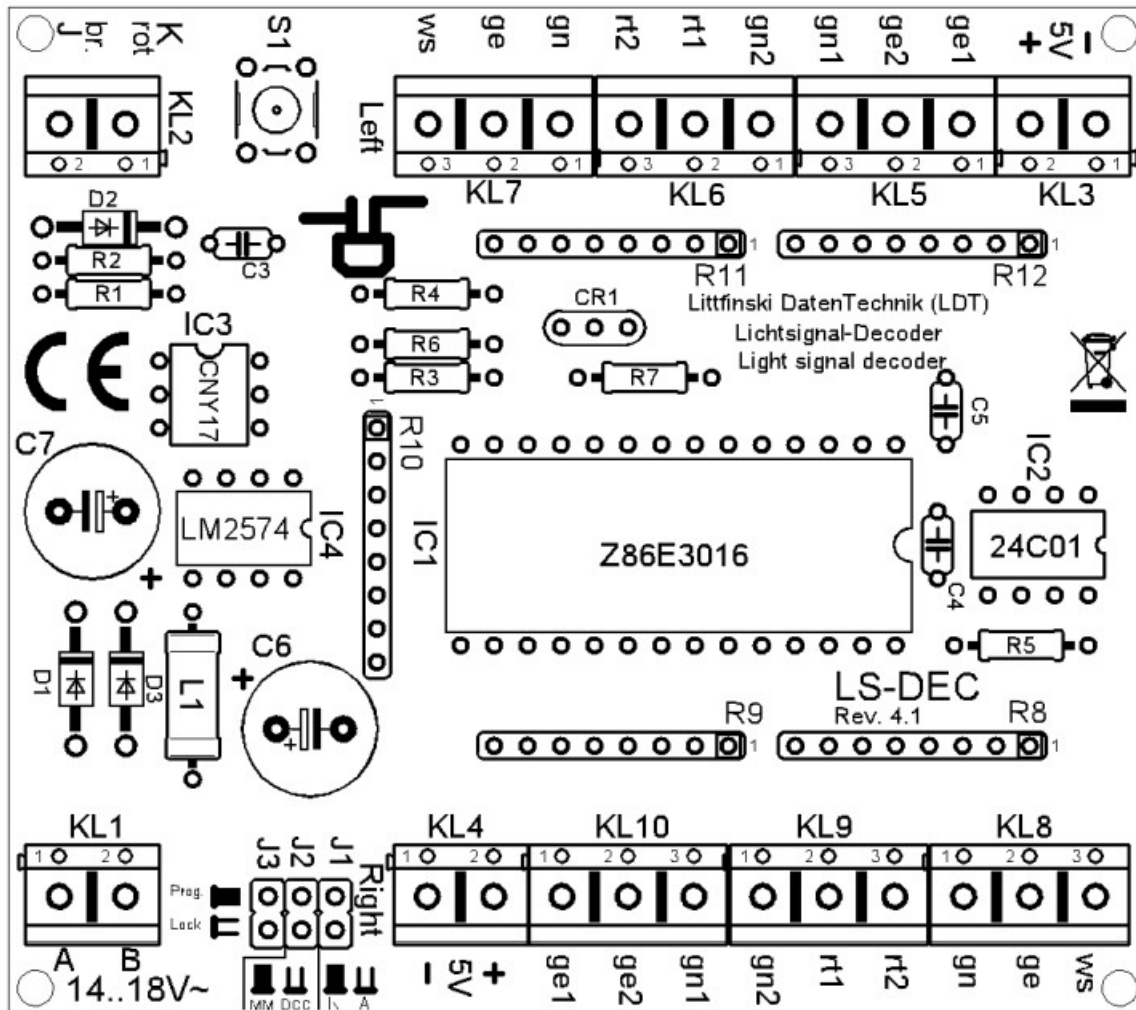
Lenz-Digital systems are using the letters 'J' and 'K'. In case you assemble the decoder to an Arnold-Digital (old)- or Marlin-Digital= system, you have to connect 'black' to 'K' and 'red' to 'J'.

The decoder receives the power supply via the two poles clamp KL1.

The voltage shall be in a range of 14…18V~ (alternate voltage output of a model rail road transformer).

If you do not want to supply voltage separately from a transformer to the LS-DEC decoder you can shorten the clamp KL1 and KL2 with two wires. In this case the decoder will get the power supply completely from the digital network.

Connecting the signals:

General:

Up to 4 signals can be connected to the Light-Signal Decoder LS-DEC.

Two signals per each 11poles clamp block. The build up of the two clamps is identical. The following description refers mainly to one clamp only. As you can see on the identical marking the description is also valid for the second clamp.

Common connection:

All LED-signals of any manufacturer are designed in accordance to the same principle. One wire of all light emitting diodes of a signal will be generally connected to a common cable. Depending if all anodes or all cathodes are connected together the signals will be called as common anodes- respectively common cathodes-

signal.

If you use signals with common anodes (e.g. supplied from Viessmann or alphamodell) you have to clamp this cable to the connection marked '+'. In addition you shall not insert the connection plug bridge in J1 in this case.

If you use signals with common cathodes you have to clamp this cable to the connection marked '-'. In addition you shall insert the connection plug bridge in J1 in this case.

The second connection of each light diode is separated and mostly color marked at the end and contains a series resistor.

Series resistor:

Light emitting diodes have always to be operated with a suitable series resistor to prevent that they will be destroyed. For this prevention all outputs have already a series resistor of 330 Ohm integrated on the printed circuit board of the Light-Signal Decoder LS-DEC. Is there no further external resistor the diode-current will be about 10 mA.
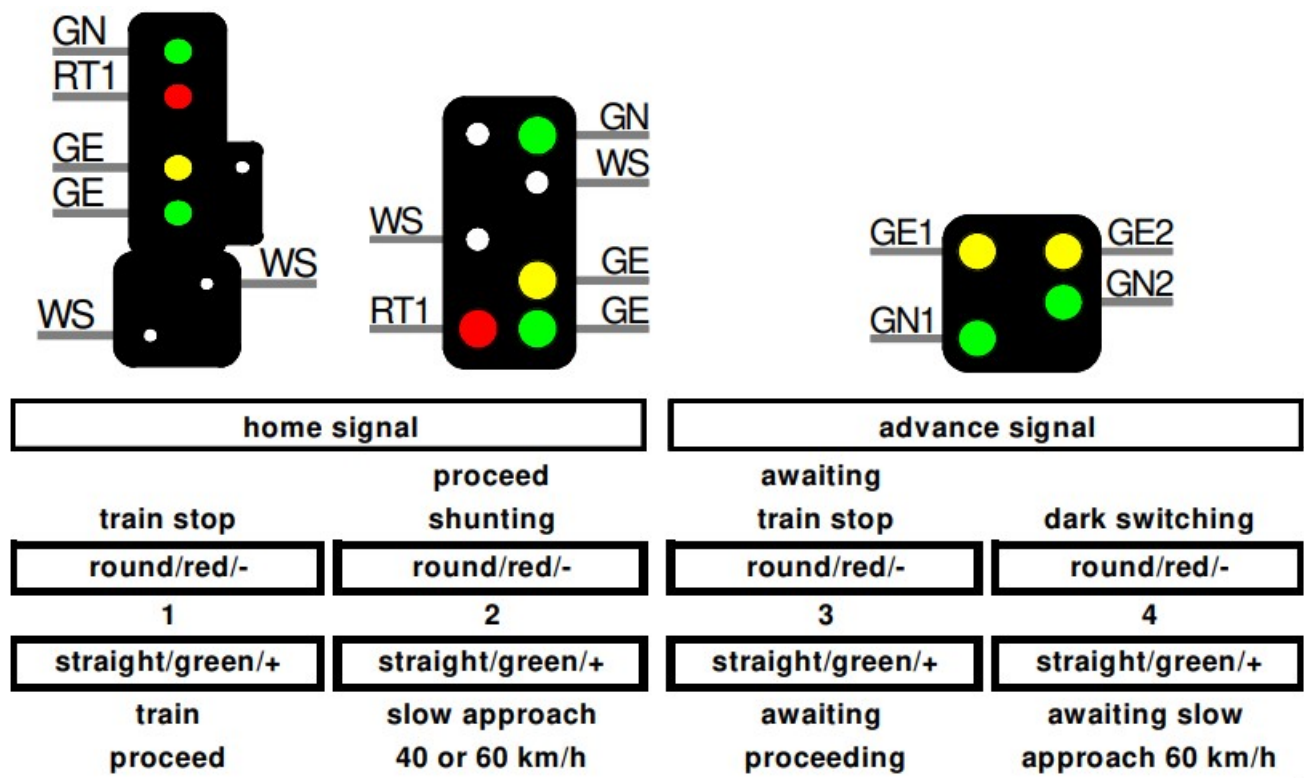
This provides sufficient brightness. Light signals of alphamodell contain integrated serial resistors which can not be removed or changed in value. The integrated resistors are suitable to provide a realistic brightness of the LED´s when connected to the Light-Signal Decoder LS-DEC.

For assigning the single cables of the light diodes to the correct clamp connection please attend to the below signal images. The marks next to signal light diodes are not corresponding to the actual light color but to the marking of the connection at the Light-Signal Decoder LS-DEC.
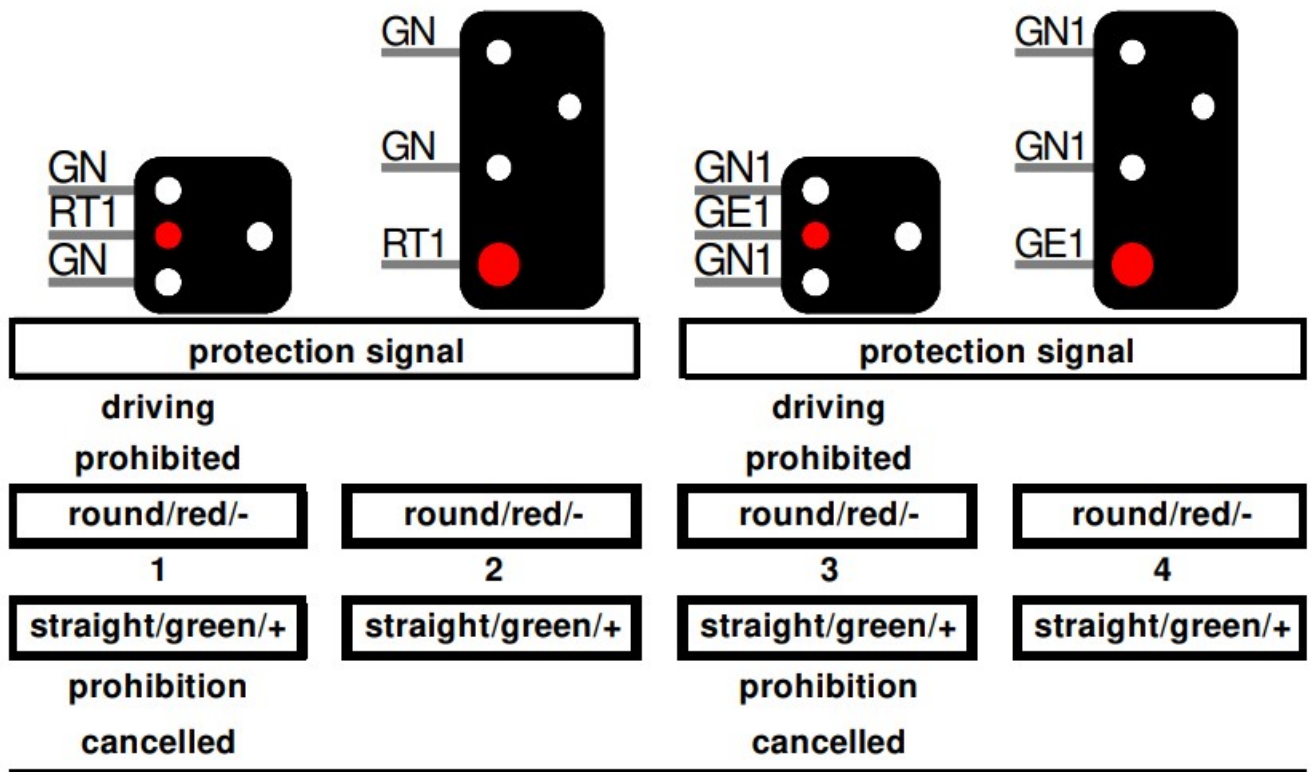
By alphamodell all shunting- and protection-signals as well as home signals with shunting display have no light emitting diodes for the white signal lights but small integrated incandescent lamps. As incandescent lamps require a considerable larger current than LED`s those light signals can only be operated at the Light-Signal Decoder LS-DEC by using the adapter Adapt-LS-A.

If you do not know the correct allocation of the single wires to the light emitting diodes you can test the function by connecting the wires to clamp RT1. This output is active because the decoder switches all signals to red after switching on.

Home- and advance signal:

home signal		advance signal	
train stop	proceed shunting	awaiting train stop	dark switching
round/red/-	round/red/-	round/red/-	round/red/-
1	2	3	4
straight/green/+	straight/green/+	straight/green/+	straight/green/+
train proceed	slow approach 40 or 60 km/h	awaiting proceeding	awaiting slow approach 60 km/h

Protection signals:

protection signal

driving prohibited		**driving prohibited**	
round/red/-	round/red/-	round/red/-	round/red/-
1	**2**	**3**	**4**
straight/green/+	straight/green/+	straight/green/+	straight/green/+
prohibition cancelled		**prohibition cancelled**	

Shunting- / Dwarf-signals:

shunting- / dwarf signal

shunting prohibited		**shunting prohibited**	
round/red/-	round/red/-	round/red/-	round/red/-
1	**2**	**3**	**4**
straight/green/+	straight/green/+	straight/green/+	straight/green/+
prohibition cancelled		**prohibition cancelled**	
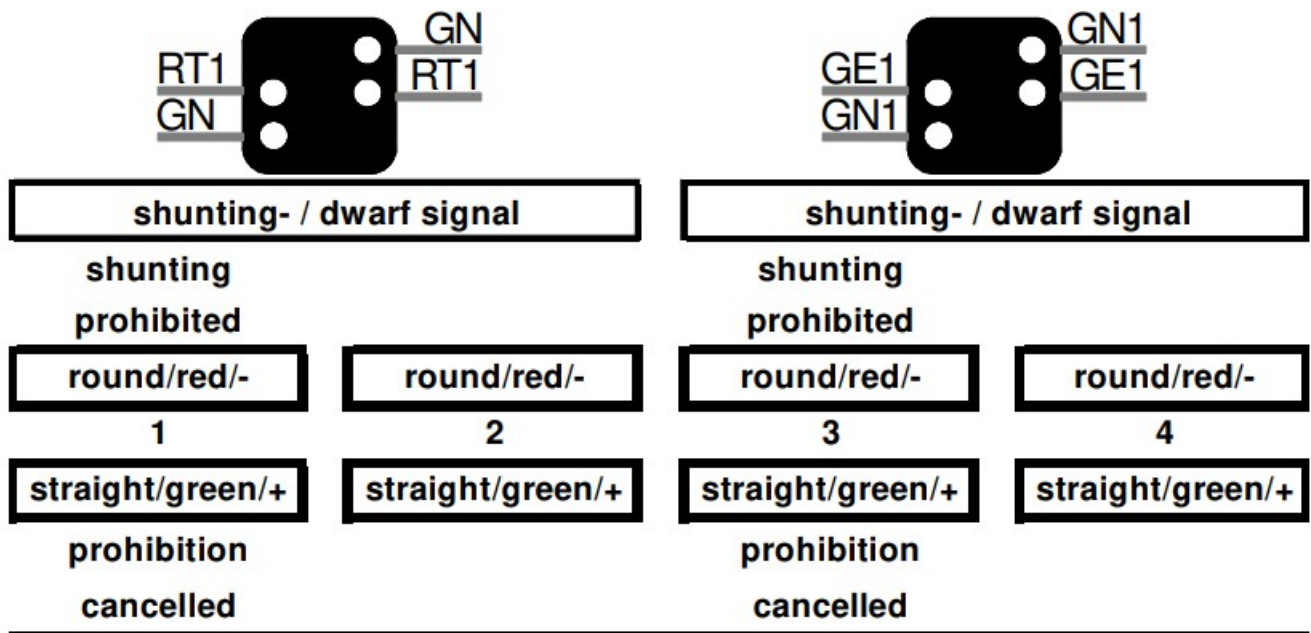
Further sample connections are available at the internet on our Web-Site (**www.ldt-infocenter.com**) at the section "Sample Connections".
Additionally you can find detailed information about the Light-Signal Decoder LS-DEC-OEBB at our Web site within the section "Digital Compendium".

Programming the decoder address:

- The jumper J3 has to be inserted for the programming of the decoder addresses.
- Switch on the power supply of your model rail way.
- Activate the programming key S1.
- At least two light emitting diodes on a signal connected to the left clamp block (on this decoder side is the

programming key S1) will be automatically switched over every 1.5 seconds in a flashing mode. This indicates that the decoder is in the programming mode.

- Press now one key of the fourfold address-group to be assigned to the left clamp block of the decoder. For programming the decoder address you can also release a turnout switch signal via a personal computer.

  Remarks: The decoder addresses for magnet accessories also to be used for the signal-aspects are combined into groups of four.

  The address 1 to 4 build the first group. The address 5 to 8 build the second group etc. Each clamp block of a LS-DEC decoder can be assigned to any of these groups. It does not matter which of the eight possible keys used for programming will be activated. The decoder stores always the complete group of keys.

- If the decoder has recognized the assignment correctly, the connected light emitting diode will flash a little faster. Afterwards the flashing slows down to the initial 1.5 seconds again.

  In case the decoder will not recognize the address it could be that the two digital information connections (clamp2) are wrong connected.

  For testing this, switch off the power supply, exchange the connection on KL2 and start addressing again.

- Press now the programming key S1 again. At least two light emitting diodes connected to the right clamp block will flash now.

  Repeat the programming as described above.

- Now press the programming key S1 a third time for leaving the programming mode. All signals will be automatically switched to STOP.

Signal switching:

The opposite sample connections show how the fourfold address group can be set by use of 8 keys of the push button panel for setting the turnouts or signals. Between each pair of keys are e.g. the addresses 1 to 4. The two keys red and green for each address are assigned to the turnout position round or straight respectively the corresponding signal aspect which is indicated above or below key. The actual address section is related to which fourfold address-group has been selected during the programming. If you use a remote control LH100 of Company Lenz Electronic then red will be the minus key and green the plus key. Have you connected a home- and an advance-signal as per first sample to one of the clamps you can switch the exit-signal to proceed with the address 1 and the key green. The light emitting diode marked with GN will now indicate this at the signal.

Special features for the signal aspect "slow proceed":
Home- and advance –signals can indicate the aspect "slow proceed with 40 km/h" and "slow proceed with 60 km/h".
The Light-Signal Decoder LS-DEC indicates at the advance signal always the aspect "slow proceed with 60 km/h".
For the home signal is it possible to select one of the two aspects for slow proceed.
Either the yellow or the green lower LED of the home signal has to be connected to the connection GE of the Light-Signal Decoder LS-DEC.

Dark switching:

In case a home- and an advance-signal are on one common signal
post the advance-signal has to remain dark if the home-signal indicates train stop or shunting prohibited cancelled.
To activate the dark-switching-mode switch the home signal to train stop". If you press now the key 4 'red' you can switch the advance signal-aspect to 'on' respectively to 'off' with each keystroke. If the advance-signal is in 'off' position the dark-switching mode is activated. The Light-Signal Decoder stores this mode permanently as well as the programmed addresses. All programmed modes can be changed at any time. The dark switching can be activated or deactivated only if the jumper J3 has been inserted.
Advance signal commands received during the signal is switched to dark will be indicated when the home signal

will be switched to proceed or slow proceed.

Accessory:

For easy assembly of the printed circuit board below your model rail road base plate we offer a set of assembly material under the order identification: MON-SET. Under LDT-01 you can purchase a low price durable suitable case for the LS-DEC.

Attention:
The Light-Signal Decoder LS-DEC switches the signal aspect not just on and off but is dimming the light emitting diodes realistic up and down.

Even between the signal aspects a short off-phase is provided. Further digital commands received during this switch-over-time of about 0.4 seconds will not be taken up from the decoder. Please take care that the switching-commands are not in a to fast sequence. The impression is absolutely realistic if the switching is considerable slow.

If the jumper J3 will be removed after programming of the decoder addresses and after adjusting the dark switching mode the memory storage of the Light-Signal Decoder LS-DEC will be protected against any alteration.

Documents / Resources

Littfinski DatenTechnik LS-DEC-OEBB-F Light Signal Decoder [pdf] Instruction Manual
LS-DEC-OEBB-F Part-No. 511012, LS-DEC-OEBB-F, LS-DEC-OEBB-F Light Signal Decoder, Light Signal Decoder, Signal Decoder, Decoder

References

- **de:ldt-infocenter [LDT]**