



Idt-infocenter LS-DEC-KS-F Light-Signal Decoder Instruction Manual

[Home](#) » [Idt-infocenter](#) » Idt-infocenter LS-DEC-KS-F Light-Signal Decoder Instruction Manual 

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Contents

- 1 For direct digital control of
- 2 Introduction/Safety instruction
- 3 Connecting the signals
- 4 Connecting the Ks-Signals to the Light-Signal Decoder LS-DEC-KS
- 5 Programming the decoder address
- 6 Signal switching
- 7 Signal aspect- and Address-table
- 8 Attention
- 9 Customer Support
- 10 Documents / Resources
 - 10.1 References
- 11 Related Posts

For direct digital control of

- two Ks-Signals of the Ks-Signal-system from the Deutsche Bahn (Ks-Entry-, Ks-Exit-, Ks-Advance signals as well as Ks-Entry- and Ks-Exit-Multiple section signals with up to 16 signal aspects).
- LED light signals with common anodes or common cathodes.

Realistic operation of the signal aspects by implemented dimming function and 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.

Introduction/Safety instruction

You have purchased the Light-Signal Decoder LS-DEC-KS for your model railway as a kit or as finished module. The LS-DEC decoders are 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 Märklin-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, Roco-Digital (switching via Keyboard or multiMAUS only; switching via Lokmaus 2® and R3® is not possible), Zimo, LGB-Digital, Intellibox, TWIN-CENTER, DiCoStation, ECoS, EasyControl, KeyCom-DC and Arnold-Digital / Märklin-Digital= whenever no connector plug bridge is inserted in position J2.

The decoder is suitable for Märklin-Digital~ / Märklin Systems or Märklin-Motorola (e.g. Control-Unit, Central Station, Intellibox, DiCoStation, ECoS, EasyControl, KeyCom-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 to be 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 Märklin-Motorola systems (e.g. Märklin-Digital~ / Märklin Systems / Intellibox DiCoStation / EasyControl).

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 this case you shall insert the connection plug bridge in J1.

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

Series resistors:

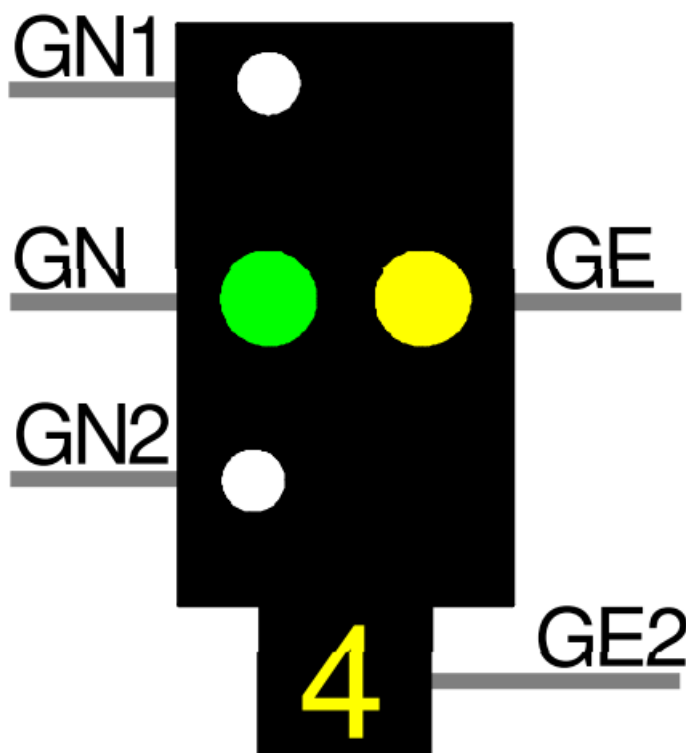
Light emitting diodes have always to be operated with a suitable series resistor to prevent that they will be destroyed. For this prevention all outputs contain already a series resistor of 330 Ohm integrated on the printed circuit board of the Light-Signal Decoder LS-DEC. Is there no further external resistor available the diode-current will be about 10 mA. This provides sufficient brightness.

For assigning the single cables of the light emitting 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 LightSignal Decoder LS-DEC.

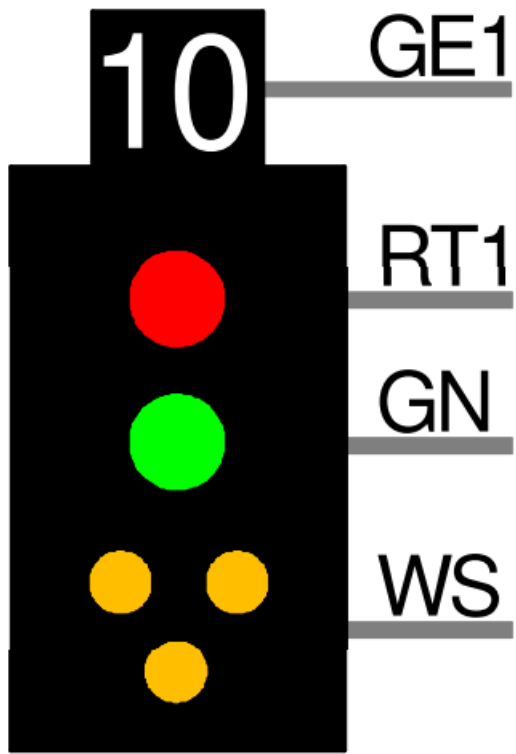
If you do not know the correct allocation of the single wires to the light emitting diodes you can test the function by connecting the wires to clamp RT1. This output is active because the decoder switches all signals to red after switching on.

Connecting the Ks-Signals to the Light-Signal Decoder LS-DEC-KS

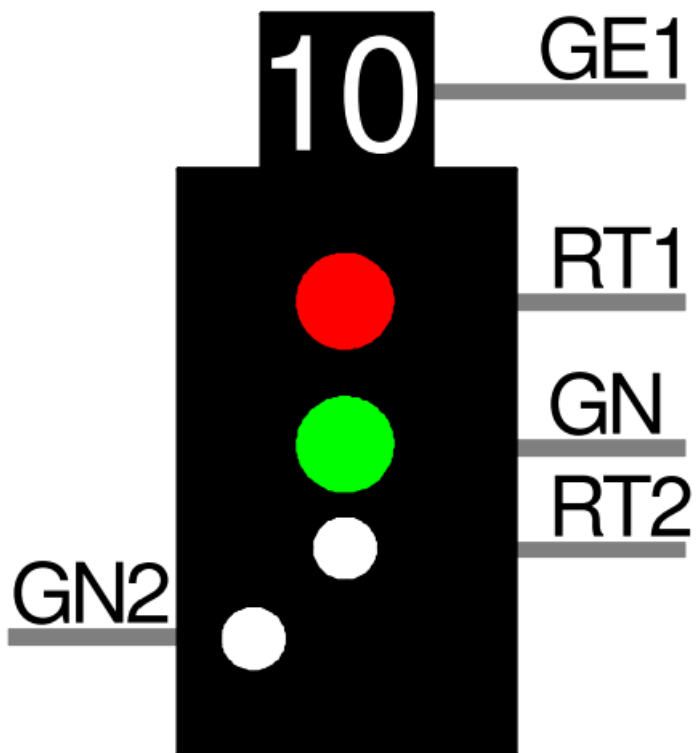
- Ks-Advance-signal



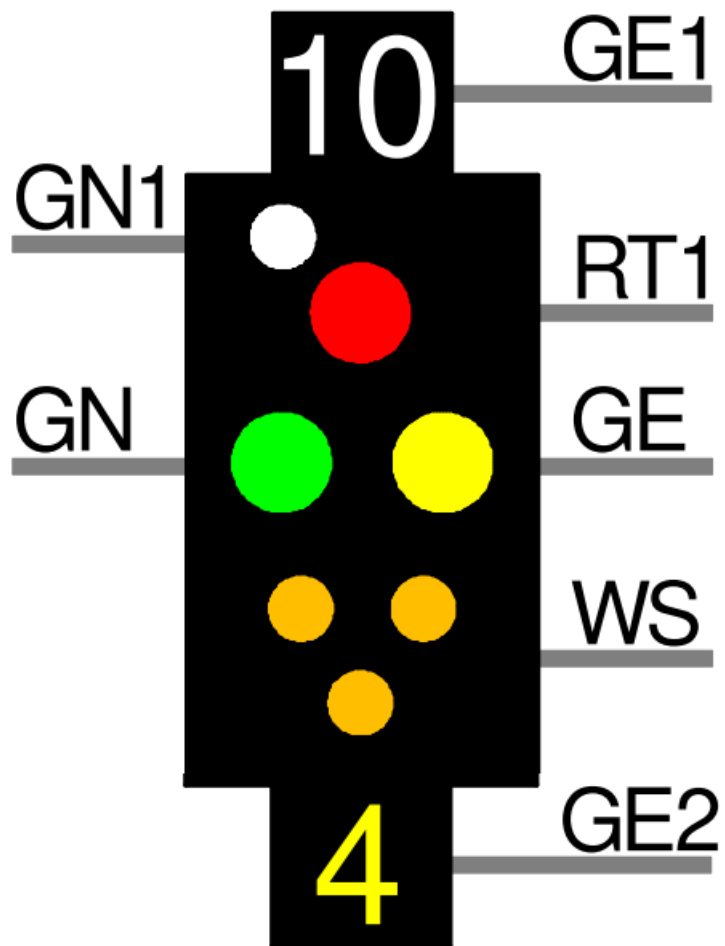
- Ks-Entry-signal



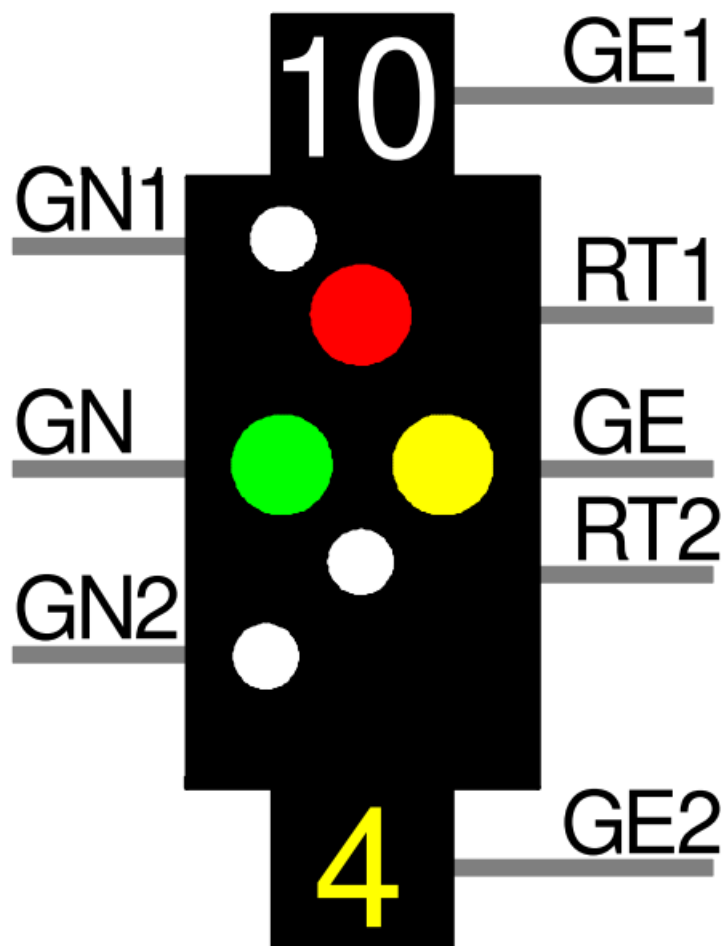
- Ks-Exit-signal



- Ks-Entry-multiple section signal



- Ks-Exit-multiple section signal



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 the model railway software.

Remarks: The decoder addresses for magnet accessories also to be used for switching the signal-aspects are combined into groups of four. The address 1 to 4 will be the first group. The address 5 to 8 will be 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 (clamp 2) 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 for this clamp block 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 addressgroup 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 Elektronik then red will be the minus key and green the plus key.

For switching 16 Ks-signal-aspects via 4 addresses this 4 addresses have been divided. Via address 3 and 4 will be one of the 4 groups selected. Via the addresses 1 and 2 will be the real signal aspects controlled.

For a signal change will be therefore max. 2 aspect-commands required. At first will be the command send for the group which includes the signal aspect. Within the second command will be the actual signal aspect transmitted and the signal will be set by the LightSignal Decoder LS-DEC-KS. If the next signal aspect will be already inside the active group, the command for the group has not necessarily renewed.

Signal aspect- and Address-table

Ks-signal aspect		group selection	
HP0	Ks1		
round/red/-	round/red/-	round/red/-	round/red/-
1	2	3	4
straight/green/+	straight/green/+	straight/green/+	straight/green/+
HP0/Sh1	Ks1/Zs3		
<hr/>			
Ks1bl/Zs3v	Ks2/Zs3		
round/red/-	round/red/-	round/red/-	round/red/-
1	2	3	4
straight/green/+	straight/green/+	straight/green/+	straight/green/+
KS1bl/Zs3/Zs3v	Ks2/Zs3v		
<hr/>			
Zs1	Ks1bl/Zs3v		
I.D. light	I.D. light		
round/red/-	round/red/-	round/red/-	round/red/-
1	2	3	4
straight/green/+	straight/green/+	straight/green/+	straight/green/+
Zs7	Ks1bl/Zs3/Zs3v		
	I.D. light		
<hr/>			
Ks2/Zs3	Ks1bl/Zs3v		
I.D.light	left bottom		
round/red/-	round/red/-	round/red/-	round/red/-
1	2	3	4
straight/green/+	straight/green/+	straight/green/+	straight/green/+
Ks2/Zs3v	Ks2/Zs3v		
I.D. light	left bottom		

After switching-on the Light-Signal Decoder LS-DEC-KS all connected signals will show the signal-aspect HP0 (Stop).

If now e.g. the signal aspect Proceed (Ks1) shall be shown, this aspect can be simply set via the address 2 key red because the old and the new aspect will be within the same group.

For setting the signal aspect Stop expected (Ks2/Zs3) shall be at first changed to the second group with the address 3 key green. Then shall be the signal aspect Ks2/Zs3 activated with address 2 key red.

With 16 signal aspects is the Ks-Signal system a complete system with difficult manual adjustment via keys. It is rather a system for PC supported model railway layouts.

Attention

The Light-Signal Decoder LS-DEC switches the signal aspects 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 too fast sequence. The impression is absolutely realistic if the switching is considerable slow.

Between the command for the group and the command for the real signal aspect are no waiting intervals required.

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

Ks-Signals of the Company alphamodell contain integrated serial resistors which can not be removed. To provide sufficient brightness of the LED's is it possible to extend the Light-Signal Decoder LS-DEC-KS with the adapter Adap-LS-A.

You can find on our Web-Site at the section "Digital-Compendium" additional information with sample connections for the Light-Signal Decoder LS-DEC-KS.

Customer Support


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Documents / Resources

	<p>ldt-infocenter LS-DEC-KS-F Light-Signal Decoder [pdf] Instruction Manual LS-DEC-KS-F, Light-Signal Decoder, Signal Decoder, Light Decoder, Decoder, LS-DEC-KS-F D ecoder</p>
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References

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[Manuals+](#).