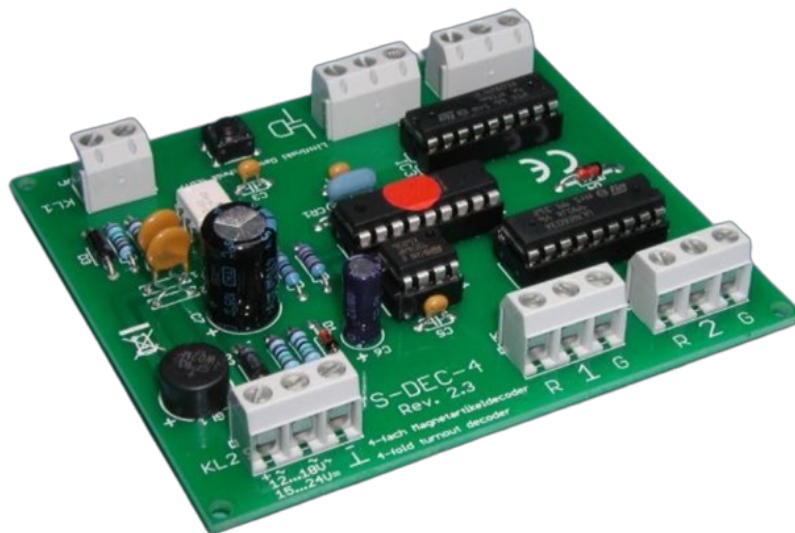




LDT S-DEC-4-MM-B 4-Fold Turnout Decoder Instruction Manual

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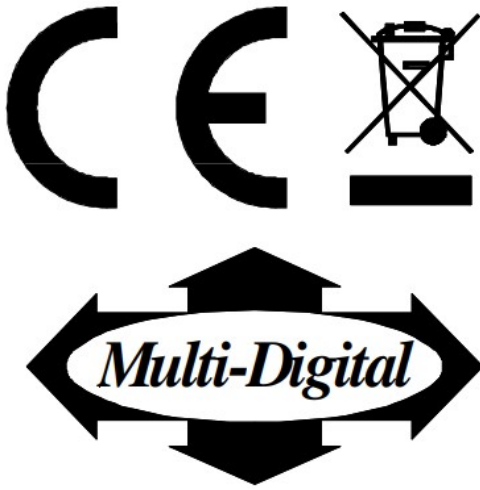


For digital control of:

- **up to 4 twin-coil magnetic accessories** (e.g. turnouts or signals).
- **up to 8 single-coil magnetic accessories** (e.g. uncoupling tracks).
- **up to 4 permanent power switch units [DSU]** (e.g. illumination or power less tracks)

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.

red point



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Introduction

You have purchased the 4 fold turnout decoder kit **S-DEC-4-MM** for your model railway supplied within the assortment of Littfinski Daten Technik (LDT). The **S-DEC-4-MM** kit is a high quality product which is easy to assemble. We are wishing you having a good time for assembling and using this product.

General

Tools required for the assembly

Please assure that the following tools are available:

- a small side cutter
- a mini soldering iron with a small tip
- solder tin (if possible 0.5mm diameter)

Safety Instructions

- We designed our devices for indoor use only.
- All electrical and electronic components included in this kit shall be used on low voltage only by using a tested and approved voltage transducer (transformer). All components are sensitive to heat. During soldering the heat

shall be applied for a very short period only.

- The soldering iron develops a heat up to 400°C. Please keep continual attention to this tool. Keep sufficient distance to combustible material. Use a heat resistant pad for this work.
- This kit consist of small parts which can possibly be swallowed from children. Children (especially under 3 years) shall not participate on the assembly without supervision.

Set-Up

For the board assembly please follow exact the sequence of the below assembly list. Cross each line off as done after completing the insertion and the soldering of the respective part.

For the diodes and the zener diodes please keep special attention to the correct polarity (marked line for the cathode).The zener diode D4 has a thicker connection wire suitable for position D4 only.

With reason to different makes of electrolytic capacitors you will find different markings of the polarity. Some are marked with “+” and some are marked with “-“. Each capacitor has to be assembled to the board that the marking on the capacitor is in correspondence with the marking on the pc-board.

Integrated circuits (ICs) are either marked with a half round notch on one end or a printed point for the correct mountingposition. Push the ICs into the socket assuring that the notch or the point is corresponding with the triangular marking on the pcboard.

Please attend to the sensitivity of the ICs to electrostatic discharge which will cause immediate damage of the IC. Before touching those components please discharge yourself by contacting an earthed metal (e.g. earthed radiator) or work with an electrostatic safety pad.

Please attend to the mark “+” of the rectifiers. Some manufacturers mark the “+” connections additionally with a longer connection wire. If the rectifier shows as marking a flattened side this side has to correspond with the marking on the pc-board.

Assembly List

Pos.	Qty.	Component	Remarks	Ref.	Done
1	1	Printed Circuit Board			
2	1	Z-Diode BZX ... 5V1	attend to the polarity!	D1	
3	2	Diodes 1N4003	attend to the polarity!	D2, D3	
4	1	Z-Diode BZX ... 30V	attend to the polarity!	D4	
5	4	Resistors 1,5kOhm	brown-green-black-brown	R1..R4	
6	1	Resistor 18kOhm	brown-grey-black-red	R5	
7	1	Resistor 220kOhm	red-red-black-orange	R6	
8	1	Resistor 1MOhm	brown-black-black-yellow	R7	
9	3	Capacitors 100nF	100nF = 104	C3..C5	
10	3	IC-Sockets 18poles		IC1..IC3	
11	1	IC-Socket 8poles		IC4	
12	1	IC-Socket 6poles		IC5	
13	1	Resonator 8MHz		CR1	
14	1	Electrolytic-cap. 100uF/25V	attend to the polarity!	C6	
15	1	Electrolytic-cap. 470uF/35V	attend to the polarity!	C7	
16	1	Rectifier	attend to the polarity!	GL1	
17	2	Multi-Fuse R050		MF1, MF2	
18	1	Push Button		S1	
19	1	Clamp 2poles		KL1	
20	5	Clamps 3poles		KL2..KL6	
21	1	IC: Z86E0...PSG	attend to the polarity!	IC1	
22	2	IC: ULN2803A	attend to the polarity!	IC2, IC3	
23	1	IC: 93C46	attend to the polarity!	IC4	
24	1	IC: CNY17	attend to the polarity!	IC5	
25			Final Control		

Soldering instruction

Provided you have no special experience in soldering electronic components please read first this soldering instruction before starting the job. Soldering has to be trained!

1. Never use additional fluxes for soldering electronic circuits which contain acids (e.g. zinc chloride or ammonium chloride). Those can destroy components and printed circuits when not washed off completely.
2. As soldering material only lead free soldering tin with a rosin core for fluxing should be used.
3. Use a small soldering iron with max 30 Watt heating power. The solder tip shall be free from scale to assure an

excellent heat transfer to the area to be soldered.

4. The soldering shall be performed on a speedy way because a long heat transfer can destroy the components. To much or to long heating can take off the copper pads and copper tracks from the board.
5. For a good soldering a well tinned solder-tip has to be brought in contact to the copper-pad and the component wire at the same time. Simultaneous a little solder-tin shall be applied for heating up. As soon as the solder-tin starts melting the tin wire has to be taken away. Just wait until the tin has well wetted the pad and the wire and take the soldering iron away from the soldering area.
6. Make sure not to move the just soldered component for about 5 seconds after removing the soldering iron. This should create a silver shining faultless soldering joint.
7. For a faultless soldering joint and well done soldering is a clean nonoxidized soldering-tip absolutely required. It is not possible to perform a sufficient soldering joint with a dirty soldering tip. Therefore please clean the soldering tip from excessive solder-tin and dirt by using a wet sponge or a silicone cleaning pad after each soldering process.
8. After completion of the soldering all connection wires have to be cutted off directly above the soldering joint by using a side cutter.

The transistor legs should never be assembled in a crossed position. Further those components should have a distance of about 5mm to the board. Attend to the short soldering time to prevent the damage of the component by excessive heat.

Capacitors shall be assembled into the respective marked bores, the wires to be bent a little apart and careful soldered to the copper pad. By the assembly of electrolytic capacitors (electrolytic cap) it has to be attended to the correct polarity (+,-)! **Wrong-way soldered electrolytic capacitors can explode during the application!** Therefore is it very important to check the correct polarity two- or even better three-times. In addition it has to be attended to the correct capacitor values, e.g. $n10 = 100pF$ (not $10nF$!).

A careful and clean assembly will drastically reduce the possibility that anything will not be in correct function. Check every step and every soldering joint two times before carrying on! Attend closely to the assembly list! Perform the described step not different and do not skip any step! Mark each step as done at the foreseen column after assembly and careful check.

Take your time. Private work is no piece-work because the time for careful assembly work is much less than an extensive fault diagnosis.

Final assembly

Sockets and integrated circuits (IC's) of the kits will be supplied on a piece of foam to assure safe transport. This foam shall never be used below or between components as this foam is electrical conductive.

In case the kit will be taken into operation the conductive foam can produce a short circuitry and destroy the complete kit. Anyhow the function of the module will not be as expected.

Warranty

As we have no influence to the proper and correct assembly we have to limit our warranty to the complete supply and the faultless quality of the components.

We guarantee the function of the components in accordance to the identified values within a non-assembled condition of the parts and the compliance of the technical data of the circuit by attending to the respective

soldering instruction and the specified start of operation of the module including connection and operation.

Further demands are not accepted.

We are not taking over any warranty nor any liability for any harm or sequential damage connected to this product.

We reserve our right for a repair, rework, supply of replacement or refund of the purchase price.

The following criteria will result to a non-repair respectively to a lost of right to claim under guarantee:

- if acid-containing soldering tin or fluxes with corrosive content and others have been used
- if the kit has been improper soldered or assembled
- by alterations or repair-trials on the device
- by own circuit amendments
- by construction of non-intended improper displacement of components, free wiring of components etc.
- application of other non-original kit-components
- by damaging of copper tracks or soldering copper pads on the board
- by wrong assembly and the sub sequential damages
- overloading the module
- by damages caused by intervention of foreign persons
- by damages caused by disregarding the operation manual respectively the connection plan
- by connecting a wrong voltage respectively a wrong current
- by wrong polarity connection of the module
- by wrong operation or damages caused by negligent usage or abuse
- by defects caused by bridged or wrong fuses.

All such cases will result to a return of the kit to your expenses.

Subject to technical changes and errors.05/2013 by LDT

Made in Europe by

Littfinski DatenTechnik (LDT) Bühler electronic GmbH Ulmenstraße 43 15370 Fredersdorf / Germany

Phone: +49 (0) 33439 / 867-0

Internet: www.ldt-infocenter.com

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Documents / Resources



[LDT S-DEC-4-MM-B 4-Fold Turnout Decoder](#) [pdf] Instruction Manual
S-DEC-4-MM-B 4-Fold Turnout Decoder, S-DEC-4-MM-B, 4-Fold Turnout Decoder, Turnout Decoder, Decoder

References

- [LDT de:ldt-infocenter \[LDT\]](#)