Assembly List:

Pos.	Qty.	Component	Remark	Ref.	Done
1	1	Printed circuit board			
2	1	Resistor 10 Ohm	brown-black-black-gold	R1	
3	1	Resistor 360 Ohm	orange-blue-black-black	R2	
4	1	Resistor 820 Ohm	gray-red-black-black	R3	
5	4	Resistors 1,5KOhm	brown-green-black-brown	R4 ... R7	
6	1	Resistor 3,6KOhm	orange-blue-black-brown	R8	
7	5	Resistors 4,3KOhm	yellow-orange-black-brown	R9 ... R13	
8	1	Resistor 4,7KOhm	yellow-violet-black-brown	R14	
9	3	Resistors 10KOhm	brown-black-black-red	R15 ... R17	
10	1	Potentiometer 100 Ohm	marking: 100 ...	P1	
11	1	Potentiometer 2,5K Ohm	marking: 2K5 ...	P2	
12	10	Diodes 1N4003	attend to polarity!	D1 ... D10	
13	1	Rectifier	attend to polarity!	GL1	
14	1	IC-Socket 28poles	attend to polarity!	IC1	
15	1	IC-Socket 16poles	attend to polarity!	IC2	
16	1	IC-Socket 8poles	attend to polarity!	IC5	
17	1	IC: 817	attend to polarity!	IC6	
18	1	Resonator 12 MHz		CR1	
19	1	Push Button		S1	
20	1	Capacitor 10nF	10nF = 103	C5	
21	5	Capacitor 100nF	100nF = 104	C6 ... C10	
22	1	Electrolytic cap. 100uF/25V	attend to polarity!	C4	
23	1	Electrolytic cap. 220uF/35V	attend to polarity!	C3	
24	2	Electrolytic cap. 470uF/35V	attend to polarity!	C1, C2	
25	1	Multi-Fuse R090		MF1	
26	1	Transistor BC 557	attend to polarity!	T1	
27	2	Transistors BC 337	attend to polarity!	T2, T3	
28	1	LED green plus dist.- spacer	attend to polarity!	LED1	
29	1	LED yellow plus dist.-spacer	attend to polarity!	LED2	
30	1	LED red plus dist.-spacer	attend to polarity!	LED3	
31	1	Pin-Bar 5poles		JP1	
32	1	Pin-Bar 6poles		ST4	
33	2	Phillips Screws M3x6	for assy. of IC3 and IC4		
34	2	Silikon Insulators	for assy. of IC3 and IC4		
35	2	Isolating Bushings	for assy. of IC3 and IC4		
36	1	Heat Sink	for assy. of IC3 and IC4		
37	1	IC:7805	assembly on cooling body	IC3	
38	1	IC: LM317	assembly on cooling body	IC4	
39	3	Clamps 3poles	build blocs before assy.	KL1 ... KL3	
40	1	Clamp 2poles	build bloc before assy.	KL4	
41	1	Clamp 2poles		KL5	
42	1	IC: ATMEGA8	attend to polarity!	IC1	
43	1	IC: L293	attend to polarity!	IC2	
44	1	IC: 6N137	attend to polarity!	IC5	
45			Final Control		

Littfinski **D**aten**T**echnik (**LDT**)

Assembly Instruction

TurnTable-Decoder (TT-DEC)

from the *Digital-Professional-Series* !

TT-DEC-B Part-No.: 010501

>> kit <<

For the **digital control of Fleischmann-, Roco-** and **Märklin-turntables.**

Suitable for the digital formats Märklin-Motorola and DCC

⇒ **For Fleischmann turntables: 6052, 6152, 6154, 6651, 9152, 6680 (each with and without "C") and 6652 (with 3-rail conductor).**

⇒ **For Roco turntable: 35900.**

⇒ **For Märklin turntable: 7286.**

⇒ **There are no modification required at the turntables!**

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.

Multi-Digital

4 038264 024063

Made in Europe by
Littfinski **D**aten**T**echnik (**LDT**)
Bühler electronic GmbH
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15370 Fredersdorf / Germany
Phone: +49 (0) 33439 / 867-0
Internet: www.**ldt-infocenter**.com

Introduction:

You have purchased a kit for your model railway supplied within the assortment of **L**ittfinski **D**aten**T**echnik (**LDT**). These kits are of high quality and easy to assemble.
We are wishing you having a good time for assembling and application of 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

- 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** please keep special attention the correct polarity (marked line for the cathode).

Please attend to the polarity mark “+” of the **rectifier GL1**. Some manufacturer are marking the +-side additional with an extended connection wire. If the rectifier contains a **flat side** this side has to correspond to the **marking on the pc-board**.

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 TT-DEC pc-board**.

The three **transistorsT1, T2 and T3** (**BC XX7**) have to be assembled with attention to the **flat side** of the transistor.

Light emitting diodes have to be assembled that the **long connection wire** of the diode corresponds to the mark "+" on the pc-board. Before assembly please slip one **distance spacer** each onto the connection wires.

The **voltage regulators IC3** (**7805**) and **IC4** (**LM317**) shall be assembled to the **heat sink** in accordance to the below **illustration 1** and **2** with **insulator**, **insulator-bushing** and **screw**. Then insert the completed assembly into the bores of the pc-board and solder them.

Integrated circuits (IC`s)** are either marked with a half round notch on one end or a printed point for the correct mounting position. Push the IC`s into the correct socket or directly into the pc-board (IC6**) assuring that the notch or the printed point is corresponding to the half-rounded marking on the pc-board.

Additionally please attend to the sensitivity of the IC`s to **electrostatic discharge** which can destroy the component. Before touching those components please discharge yourself by contacting an earthed metal (e.g. heater etc.) or work with an electrostatic-protected pad.

Assembly of the voltage regulator IC3 and IC4:

The **voltage regulators IC3** (**7805**) and **IC4** (**LM317**) shall be assembled to the **heat sink** in accordance to the below **illustration 1** and **2** with **insulator**, **isulating-bushing** and **screw**.

Then **insert** the **completed pre-assembly** into the **bores of the pc-board** and solder them.

Finally **tighten** the two **screws** and solder the **heat sink** and the two **voltage regulators**.

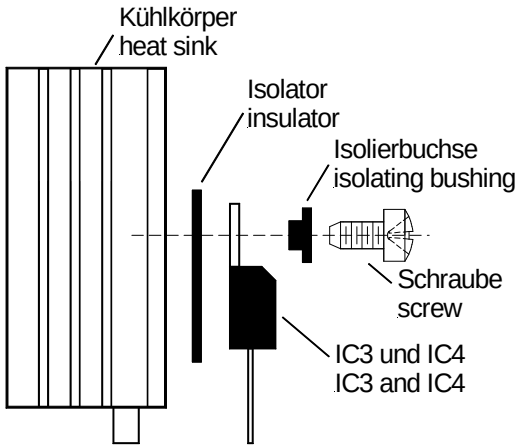

illustration 1

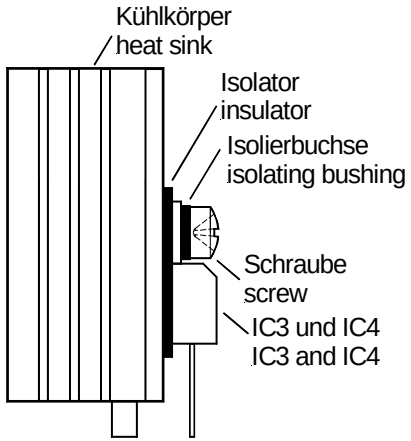

illustration 2