

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

The **resistor-network RN1** is marked at one end for the assembly position with "...103..." and additionally with a printed circle or a square. Assemble this component that way that the marking corresponds with the marking at the first bore of the pc-board. Additionally is the first bore marked with "1".

**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 assuring that the notch or the printed point is corresponding to the half-rounded marking on the pc-board. The 4-poles integrated circuit LTV814 (IC6) shall be soldered directly onto the pc-board.

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.

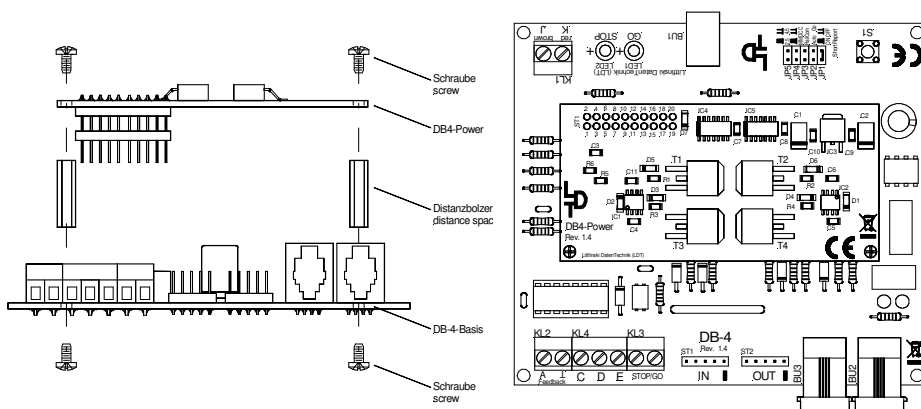
## Assembly of the DB4-Power PC-Board:

After completing the DB-4 basic pc-board you can assemble the SMD-pre-assembled and tested DB4-Power PC-Board.

Firstly please tighten the two distance spacer to the basic pc-board with two of the four cross section screws.

Apply now the DB4-Power PC-Board into the socket bar BU4 of the basic pc-board. Pay attention that there is no offset of the DB4-Power PC-Board to the socket. The DB4-Power PC-Board is in correct position at the socket bar BU4 of the basic pc board if you can screw the DB-Power PC Board to the distance bolts.

The following picture 1 show the assembly procedure from the side view and the picture 2 show the assembled DB4-Power-PC Board onto the basic PC-Board with sight from the top.



Picture 1

Picture 2

Littfinski DatenTechnik (LDT)

Assembly Instruction



# DigitalBooster DB-4

from the *Digital-Professional-Series* !

DB-4-B Part-No.: 080071

>> kit <<

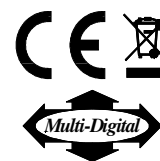
The **DigitalBooster DB-4** is a **short-circuit-protected power amplifier (booster)** for **digital model railway layouts**. It provides a **maximum digital current of 2.5 or 4.5 Ampere**.

The DB-4 amplifies the digital formats of Märklin-Motorola, mfx®, M4 and DCC.

The DB-4 can operate on several digital command stations by using the 5-poles booster bus, the CDE-booster bus or the Roco-booster bus.

The DigitalBooster DB-4 receives the power supply not from a classical model railway transformer but from the switched mode mains power supply DB-4 PowerSupply. On this unit is the stabilized digital track voltage adjustable between 15 and 24 Volt, suitable for all track gauges.

This product is not a toy! Not suitable for children under 14 years. Improper use will imply danger or injuries due to sharp edges and tips! Please store this instruction carefully.



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## Introduction:

You have purchased a kit for your model railway supplied within the assortment of Littfinski DatenTechnik (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

- 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 contains small parts which can possibly be swallowed from children. Children (especially under 3 years) shall not participate on the assembly without supervision.

## Assembly List:

Pos.	Qty.	Components	Remarks	Ref.	Done
1	1	Printed circuit board	DB-4 Rev. 1.4		
2	2	Resistors 0,1 Ohm	Marked: "R10"	R1, R2	
3	1	Resistor 10 Ohm	brown-black-black-gold	R3	
4	1	Resistor 100 Ohm	brown-black-black-black	R4	
5	1	Resistor 180 Ohm	brown-gray-black-black	R5	
6	2	Resistors 220 Ohm	red-red-black-black	R6, R7	
7	1	Resistor 330 Ohm	orange-orange-black-black	R8	
8	1	Resistor 470 Ohm	yellow-violet-black-black	R9	
9	1	Resistor 1 KOhm	brown-black-black-brown	R10	
10	1	Resistor 2,2 KOhm	red-red-black-brown	R12	
11	2	Resistors 3,3 KOhm	orange-orange-black-brown	R13, R14	
12	2	Resistors 4,7 KOhm	yellow-violet-black-brown	R15, R16	
13	4	Resistors 10 KOhm	brown-black-black-red	R11,R18...R20	
14	1	Resistor 12 KOhm	brown-red-black-red	R21	
15	1	Resistor 27 KOhm	red-violet-black-red	R22	
16	3	Resistors 47 KOhm	yellow-violet-black-red	R17,R23,R24	
17	1	Resistor 1 MOhm	brown-black-black-yellow	R25	
18	1	Network 5*10 KOhm	attend to polarity!	RN1	
19	10	Diodes 1N4003	attend to polarity!	D1...4, D6...11	
20	3	Diodes 1N5819	attend to polarity!	D5, D12, D13	

21	1	Z-Diode BZX ... 5V1	attend to polarity!	D14	
22	1	Z-Diode BZX ... 30V	attend to polarity!	D15	
23	1	IC-socket 28poles	attend to polarity marking!	IC1	
24	3	IC-sockets 8poles	attend to polarity marking!	IC2, 3, 5	
25	1	IC-socket 16poles	attend to polarity marking!	IC7	
26	1	IC: LTV814	attend to polarity!	IC6	
27	1	DC-DC Converter	attend to polarity!	IC4	
28	1	Resonator 8MHz		CR1	
29	5	Capacitor 100nF	100nF = 104	C1...C5	
30	1	Tantalum cap. 1uF/35V	1uF = 105; attend to polarity!	C6	
31	3	Tantalum cap. 10uF/10V	10uF = 106; attend to polarity!	C7...C9	
32	4	Electrolytic cap. 470uF/35V	attend to polarity!	C10...C13	
33	1	Storage choke		L1	
34	1	DC-socket		BU1	
35	2	Sockets 4poles		BU2, BU3	
36	1	Socket bar 2x10poles		BU4	
37	1	Pin bar 2x5poles		JP1 ... JP5	
38	5	Jumpers	set on pin bar 2x5poles	JP1 ... JP5	
39	2	Pin bars 5poles		ST1, ST2	
40	1	Push button		S1	
41	1	LED green plus distance sleeve	attend to polarity!	LED1	
42	1	LED red plus distance sleeve	attend to polarity!	LED2	
43	1	Clamp 2poles		KL1	
44	3	Clamps 2poles and 3poles	build block prior to assembly	KL2 ... KL4	
45	1	IC: ATMEGA168-20	attend to polarity!	IC1	
46	1	IC: LM2574HVN-5	attend to polarity!	IC2	
47	1	IC: LM393	attend to polarity!	IC3	
48	1	IC: HCPL2631	attend to polarity!	IC5	
49	1	IC: LTV847	attend to polarity!	IC7	
50	4	Cross headed screws M3x6	for assembly "DB4-Power"		
51	2	Distance spacer 18mm	for assembly "DB4-Power"		
52	1	DB4-Power	assembly acc. instruction		
53			final control		

## Set-Up:

For the board assembly please follow exact the sequence of the above **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).

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.

For **tantalum capacitors** please attend to the connection wire marked "+". This wire has to correspond to the printed mark on the pc-board.