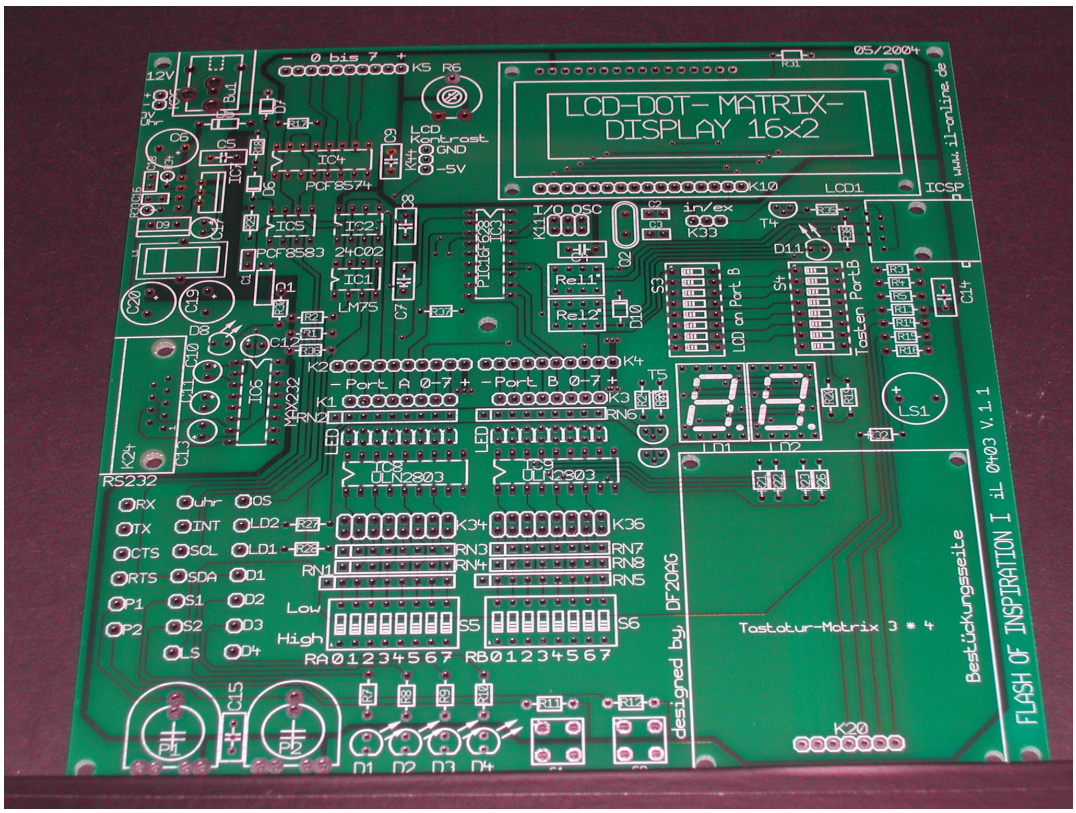
Assembly manual for „Flash of Inspiration I“ release 1.1 May 2004

Please read this assembly manual very carefully before starting your work. The schematic symbols are drawn in the european standard. In doubt please refer the appendix 2.

The following tools will be helpful for assembling:
diagonal cutter, small pliers, pincer, soldering iron with small tip (electronic controlled), multimeter, jigsaw and small wooden board.

„Flash of Inspiration I“ has been assembled successfully many times. All experience is reflected in this assembly manual.

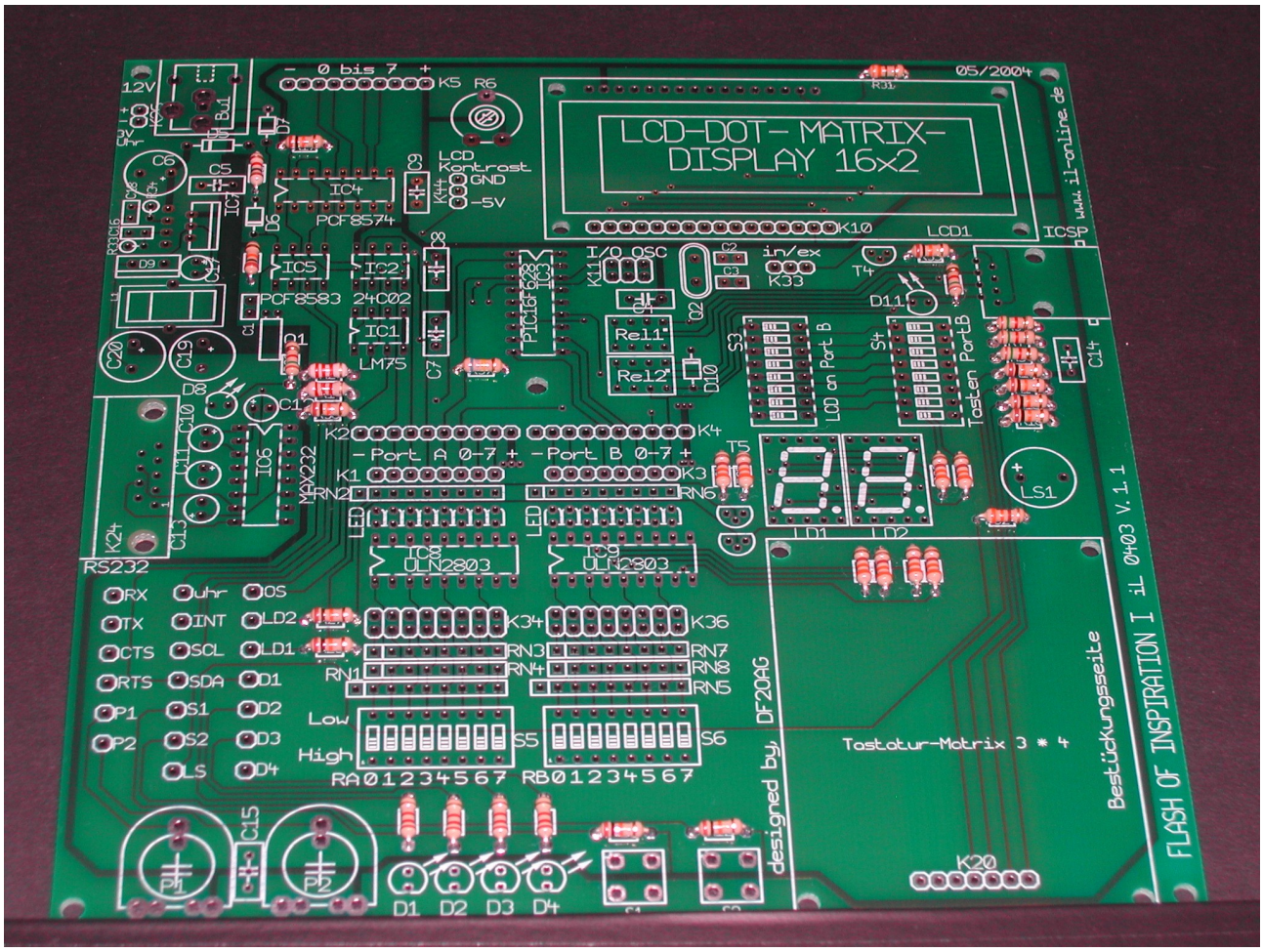
Mounting the pcb becomes easier when starting with the flat components (e.g. lying resistors). Then mount the next higher components and so on. This strategy is used in this manual. The only exception is the switching power supply. This part is mouted first of all because a right working power supply is needed. Only if the power supply works well you can continue mounting all these sensitive components on the pcb.



The bare printed copper board (pcb).

1. Step
Mounting the flat components
lying resistors

There are 35 resistors (1/4 Watts, case R3) to mount. First carefully bend all connecting wires by 90 degrees close to the body then put them into the according wholes. It looks nicer if the tolerance ring (gold or silver) of all resistors align to right. It simplifies the mounting check.



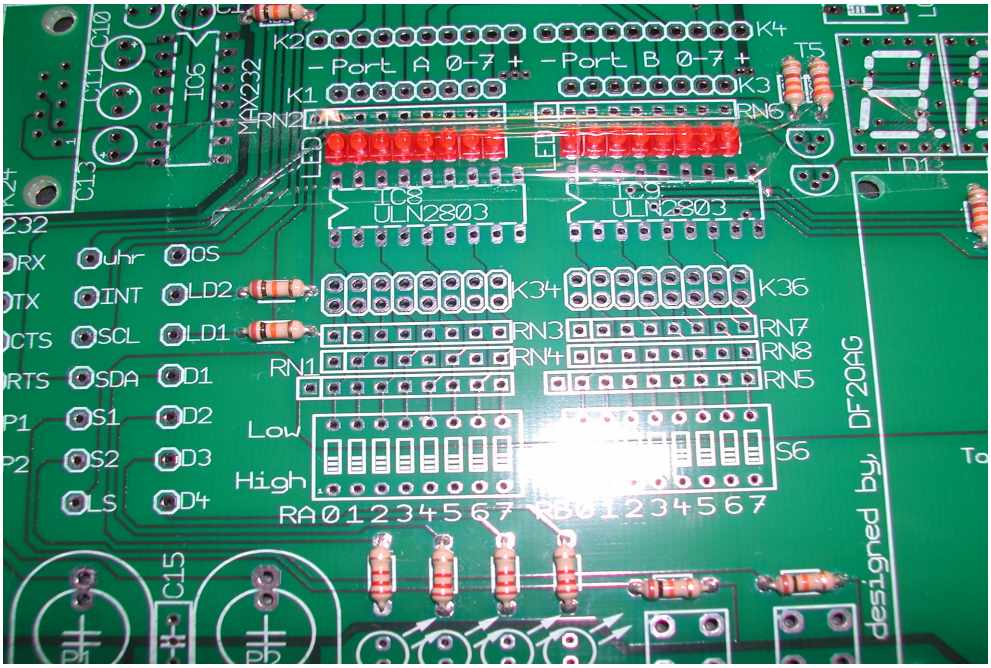
All lying resistors are mounted

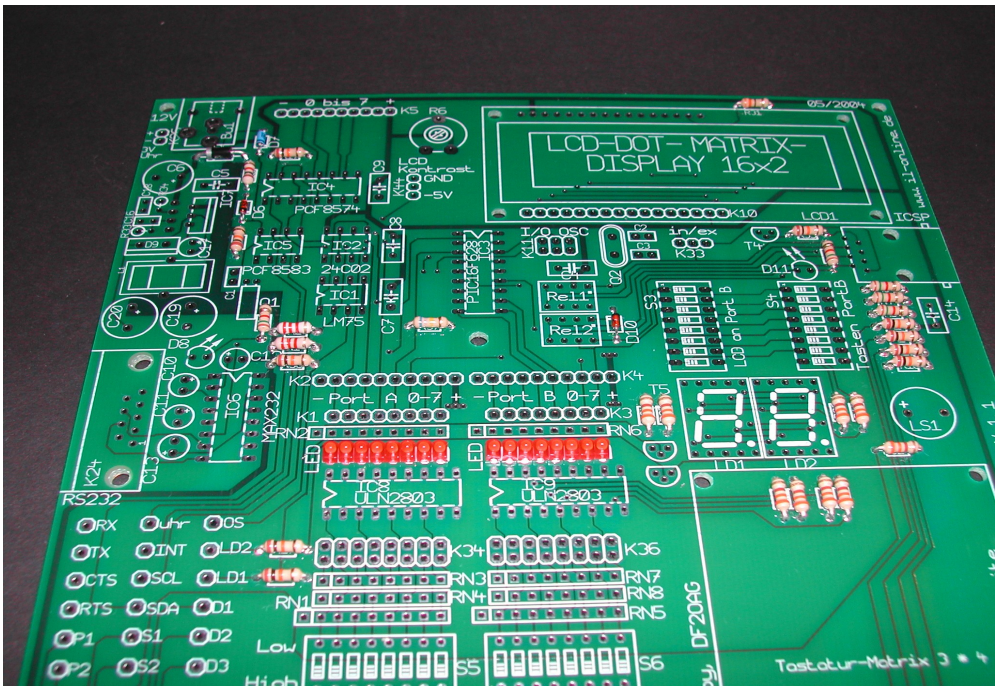
1. Step
Mounting the flat components
lying diodes

Now you may mount the 4 lying diodes. **No LEDs and not D9.** Take care of the diodes alignment. The cathode is marked with a ring.

1. Step
Mounting the flat components
mini LED

Now we turn to the 16 mini leds. Put the pcb on a drinking glass and place all 16 leds in the according holes. Take care of the alignment. The flat side aligns to south (direction IC8 and IC9). Now fix them at one pin with the soldering iron. Align them vertically. Eventually you must heat up the solder again. Turn pcb upside down and solder the leaving pins. Finally cut the wire.



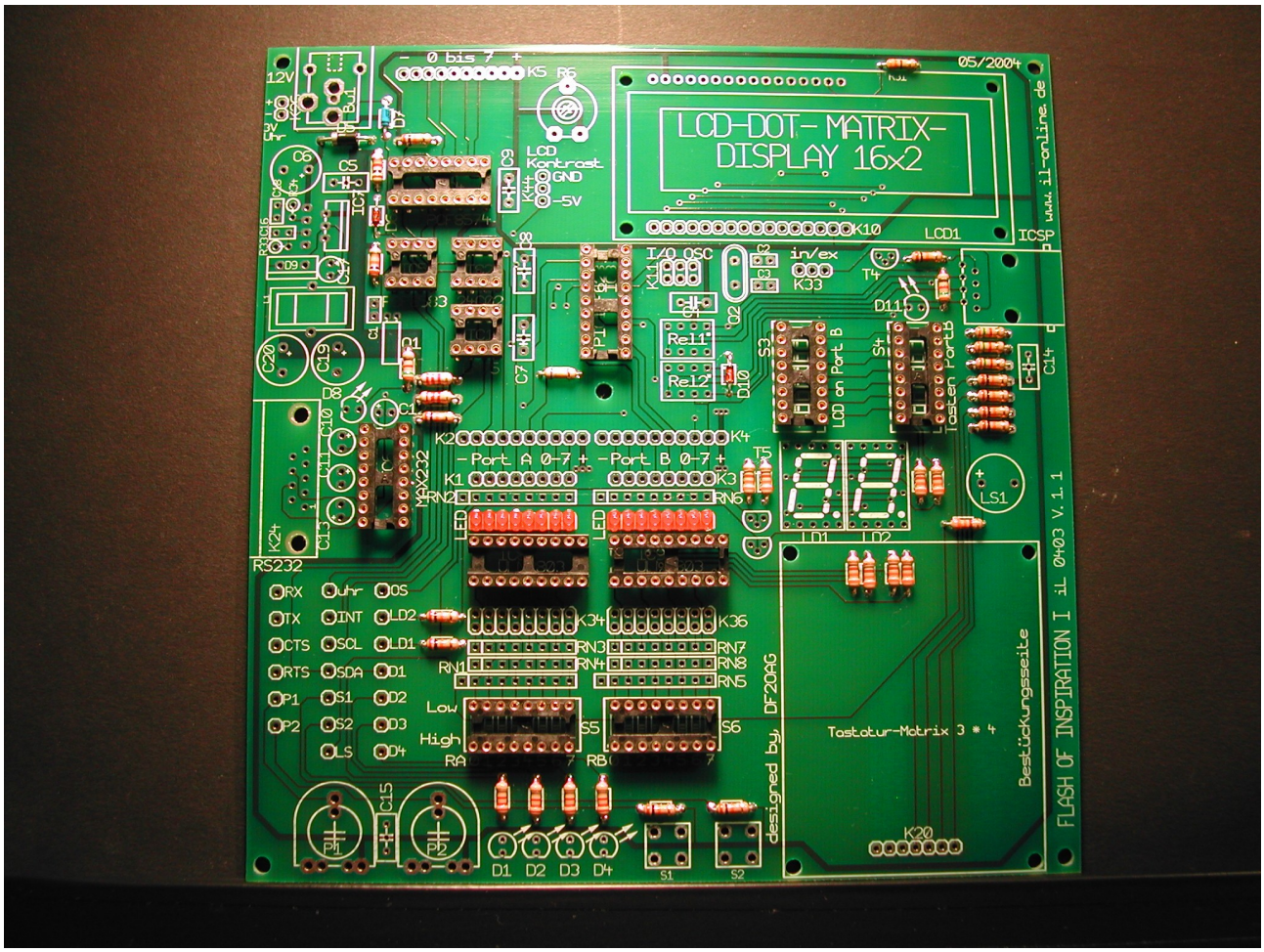


all mini leds are mounted

1. Step
Mounting the flat components
ic sockets

Let’s mount the ic sockets and the socket stripes. Place the sockets one by one in the right position on the pcb. Alignment is important. Usually a notch shows the right direction. Fix the socket with the soldering iron at two pins lying vis-a-vis. Turn the pcd upside down and solder the rest of the pins.

For the dip switches S3 to S6 we use sockets too. The notch shows in direction of pin 1 of the dip switches.

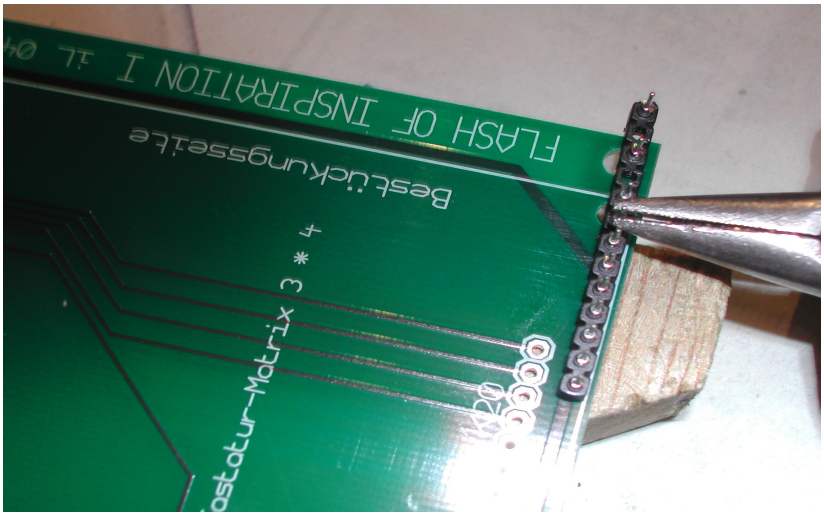


Pcb with ic sockets

1. Step
Mounting the flat components
ic socket stripes

First cut the ic socket stripes to the right length using a diagonal cutter. Then solder the middle pin on the pcb. Align it vertically. Then turn the pcb upside down and solder the leaving pins.

To put the ic socket stripes to the connecting area (above the trim potentiometer) you have to remove every second pin first. With a little long nose pliers you can push the pin easly out of the stripes. To avoid damage you should push it through a pcb mounting hole. The first picture on this page shows you that procedure.

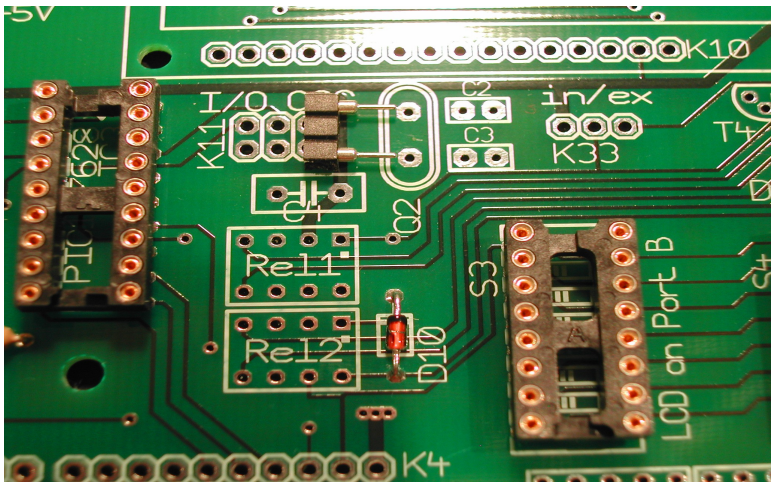


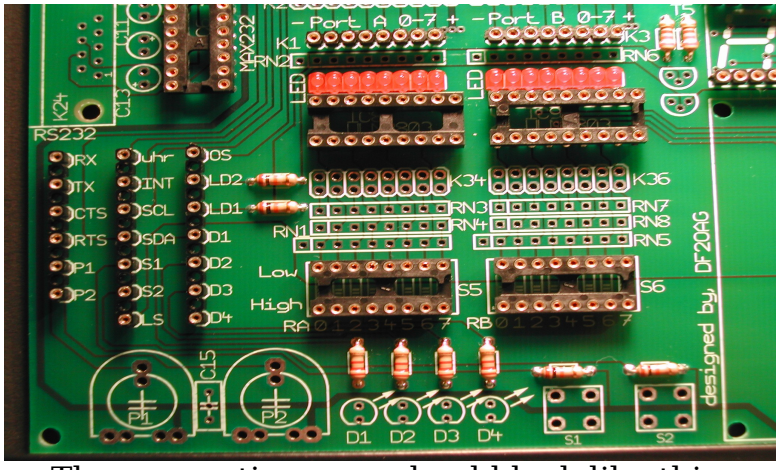
To do so, it is easy to push the pin out of the socket stripes

Before mounting, the stripes should look like above

1. Step
Mounting the flat components
ic socket stripes

For best flexibility it is recommended to mount the xtal on sockets, too.



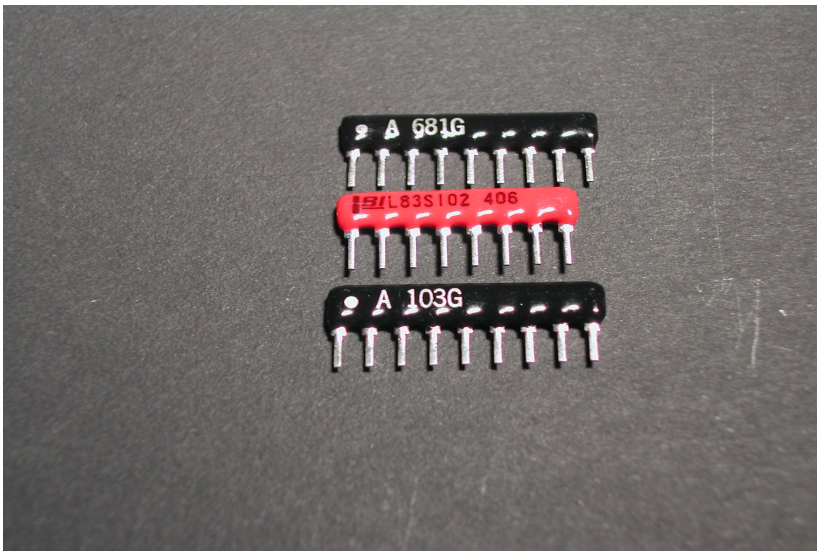


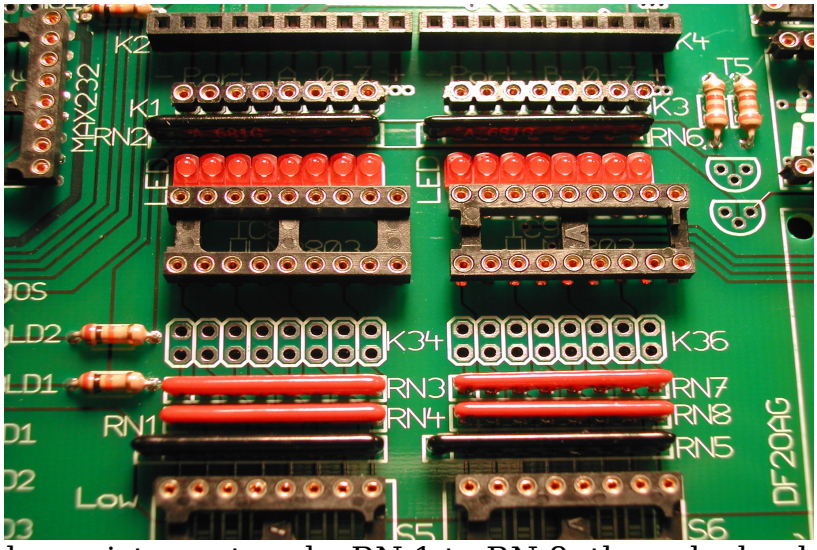
The connection area should look like this.
You can still see the empty spaces for the
resistor networks RN1 to RN8.

1 Step
Mounting the flat components
resistor networks RN 1 to RN 8

When placing these parts on the pcb you must take care for the right position too. Pin 1 of these resistor networks is marked with a point or bar. On the pcb this location is a bordered hole.

RN2 and RN6	should named as „681“.
RN3, RN4, RN7, RN8	should named as „102“.
RN1 and RN5	should named as „103“.

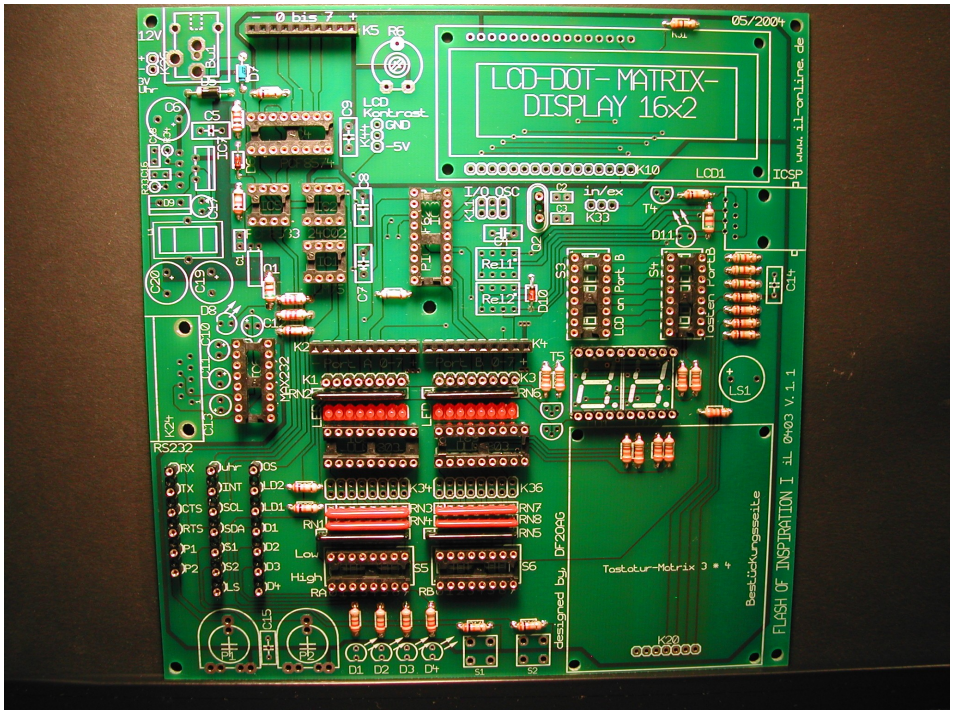




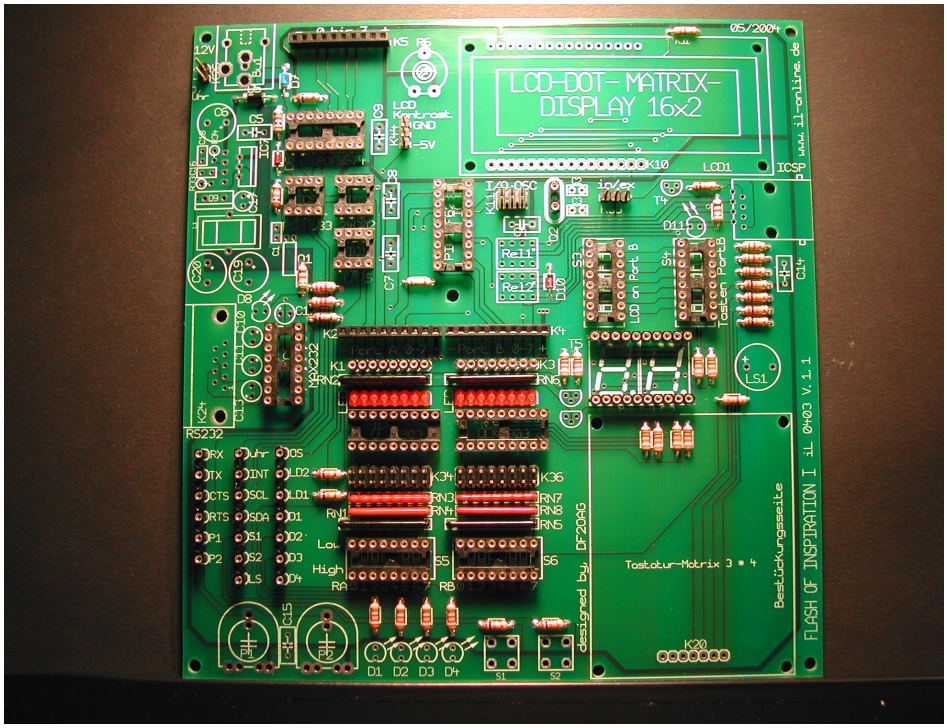
After placing the resistor networks RN 1 to RN 8, the pcb should look like this

1. Step
Mounting the falt components
male and female connectors

Now we mount the three female connectors K2, K4 and K5.



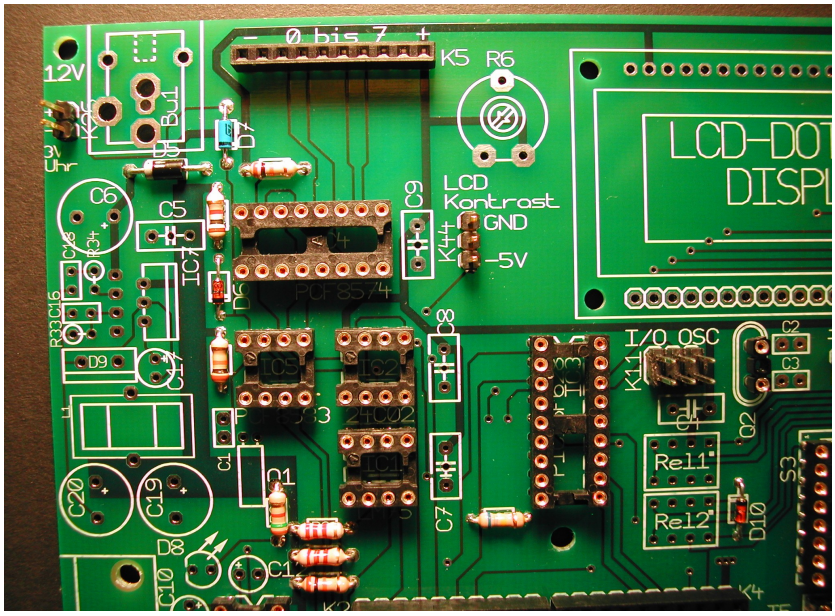
The two-pin male connectors K34 and K36 can be split with the jigsaw. A cutter separates the one-pin male connector easily.



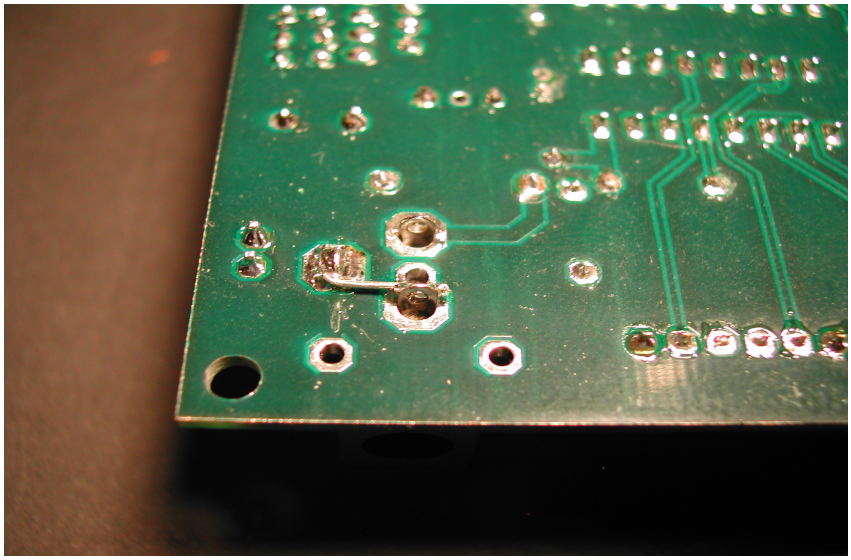
Now we finish the first step of assembly.

2. Step
Assembly and function check of the switching power supply.

The switching power supply contains following components: Bu1, C6, C5, C18, R33, R34, IC7, D9, C17, L1, C19, C20, and led D8. C6, C17, C19 and C20 are electrolytic capacitors which are unipolar so they must be built in the right orientation. On the pcb, the positive terminal is marked with a ‚+' sign. Usually however the negative terminal is marked at the capacitor itself. The right orientation is also necessary when mounting the diode D9 and led D8. The cooling terminal of diode D9 is visible well on the pcb surprint. The flat side of led D8 shows to west.



Two alternative cases are useable for the female connector BU1. When using the smaller one you must shorten two pads with a small piece of wire on the solder side of the pcb. The next picture shows you the how-to-do.



2. Step
Assembly and function check of the switching power supply

At the moment the pcb should look like this. Before the electrical function check starts please check the position and values of the components carefully. Bad soldered and forgotten pads must now be soldered. Short-curcuit by tin solder must be removed on both sides of the pcb.

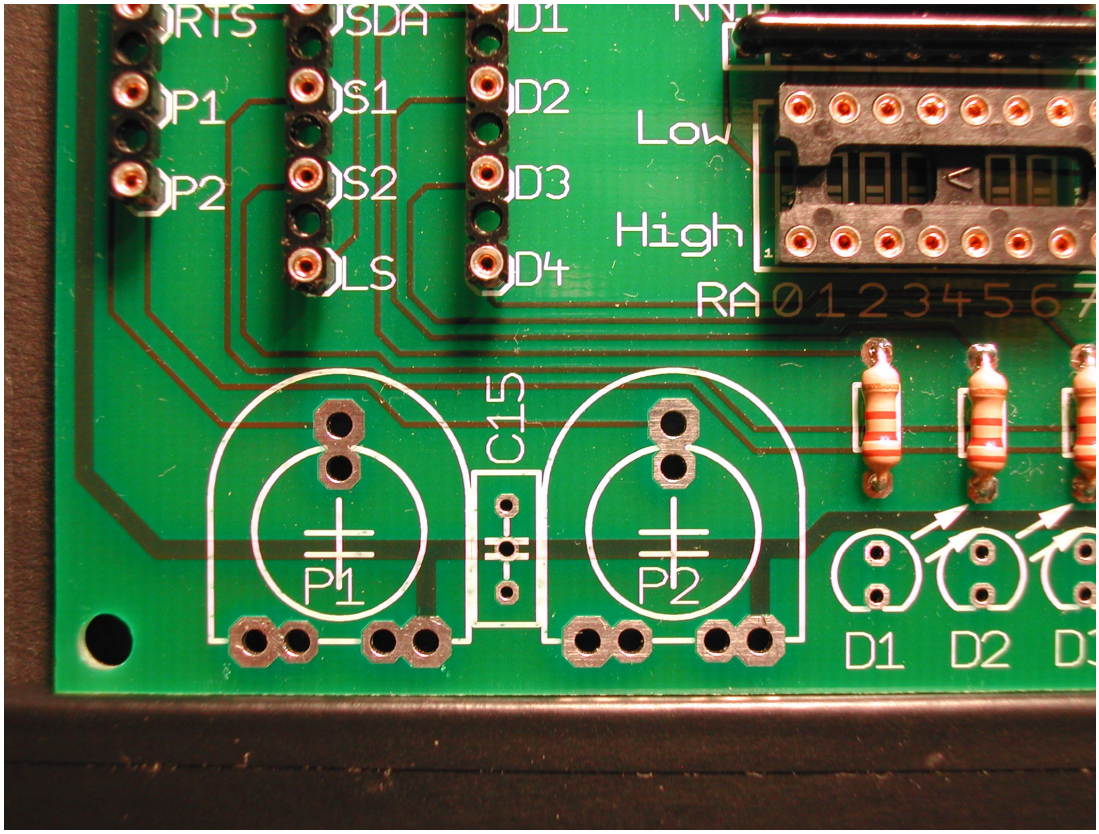
Having finished the visual inspection successfully we can start the electrical check. Put the pcb on a non conducting surface (e.g. dry pasteboard). Take care that there are left no small wire or tin solderis on the pcb.
Hastiness can demage the hardware.

When using the female connector BU1 of „Conrad, 737992-33“ the inner pin must be connected to the negative terminal of the mains unit. Using BU1 of „Reichelt, HEBW-21“ this inner pin must be connected to positive terminal.

Select a tension of 12 V and connect the mains unit to connector BU1. The current should be about 25 mA. Little less is ok if led D8 is on. A higher current could be the result of a fault. In this case turn off power supply immediately and check placement again. If everything is ok you should check the output voltage before continuing assembling.

2. Step
Assembly and function check
of the switching power supply

Connecting the multimeter to the pins of the trim potentiometer P2 would be the best for measuring the output voltage. The two pads on the lower left corner (south west) are GND (Vdd). The two pads on the lower right corner have positive voltage.

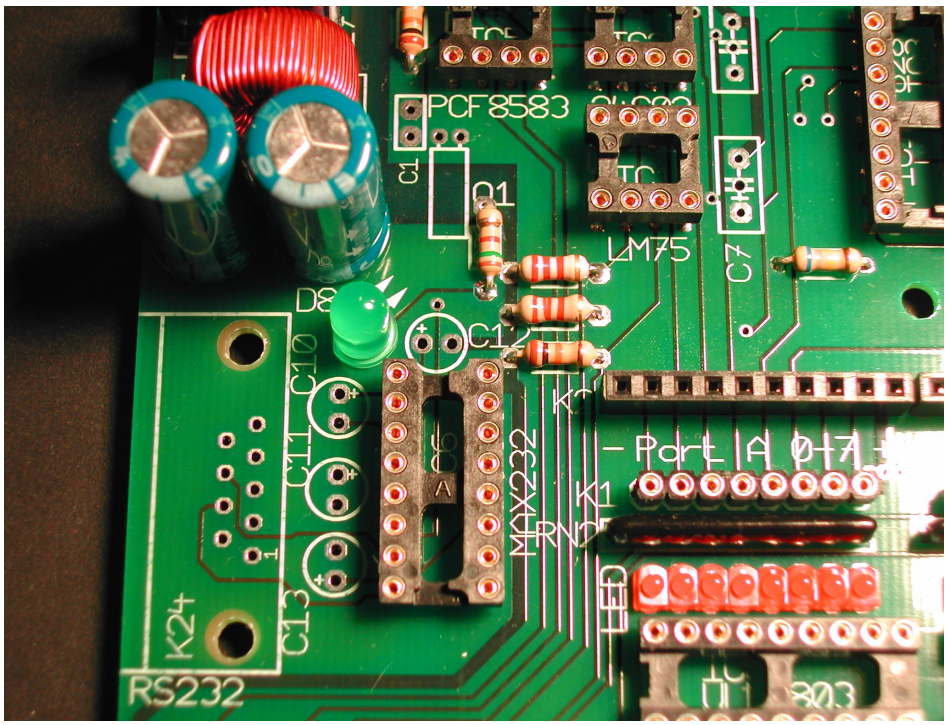


The tension between this two points should be 5,00 V to 5,15 V. If you get other values you have probably a mistake in placing components. Check again all component's values and orientations.

All switching power supplies we built up along with „Flash Of Inspiration I" work at once and without any further problems.

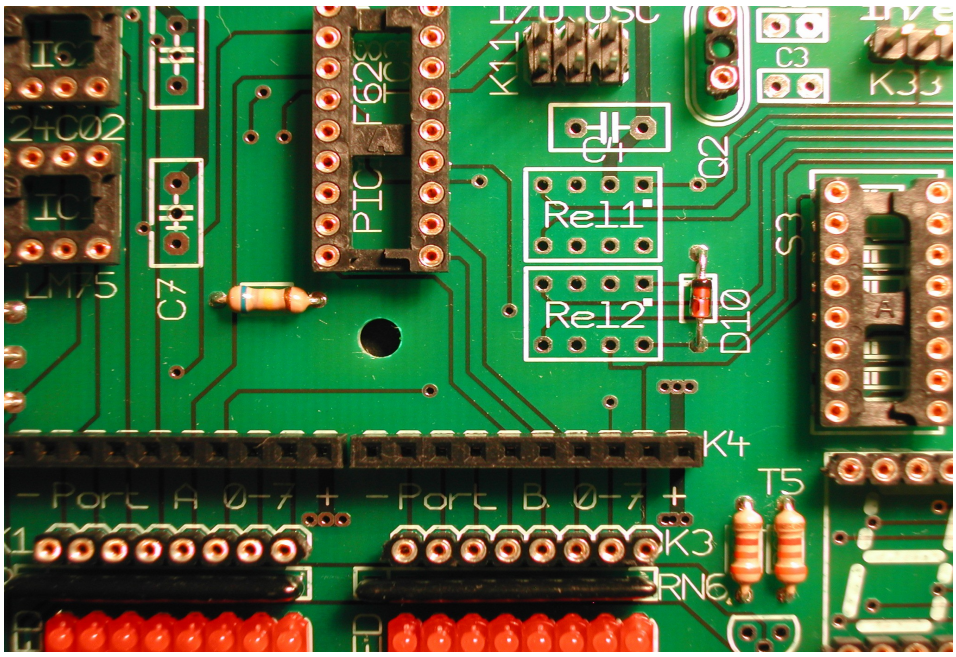
3. Step
Mounting all other components
real time clock and RS232 interface

On the pcb's left side you can mount C1 and Q1, two components of the real time clock. The next parts to mount are C10 to C12. These are electrolytic capacitors, so take care of the right orientation. C13 is such a capacitor too, but its orientation is not the same. Then you can build in connector K24.



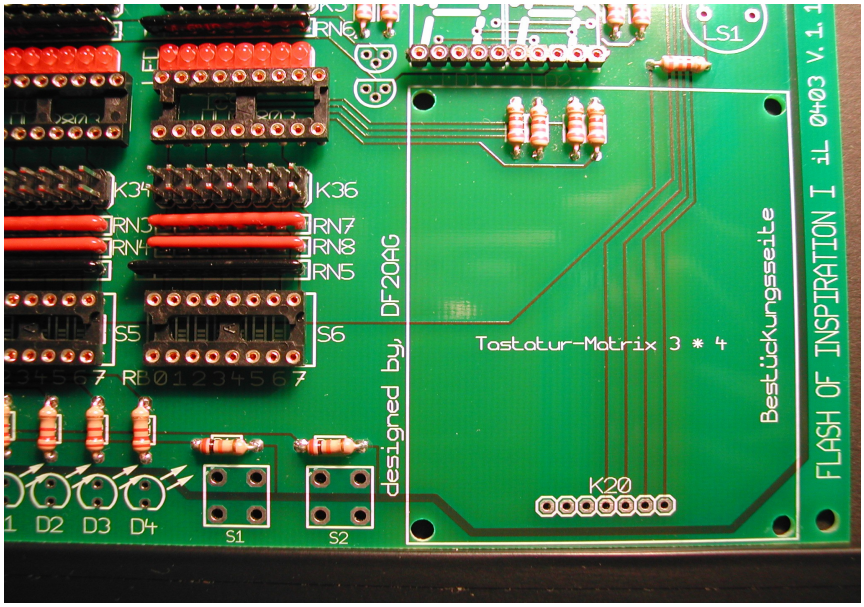
3. Step
Mounting all other components
2 miniature relais

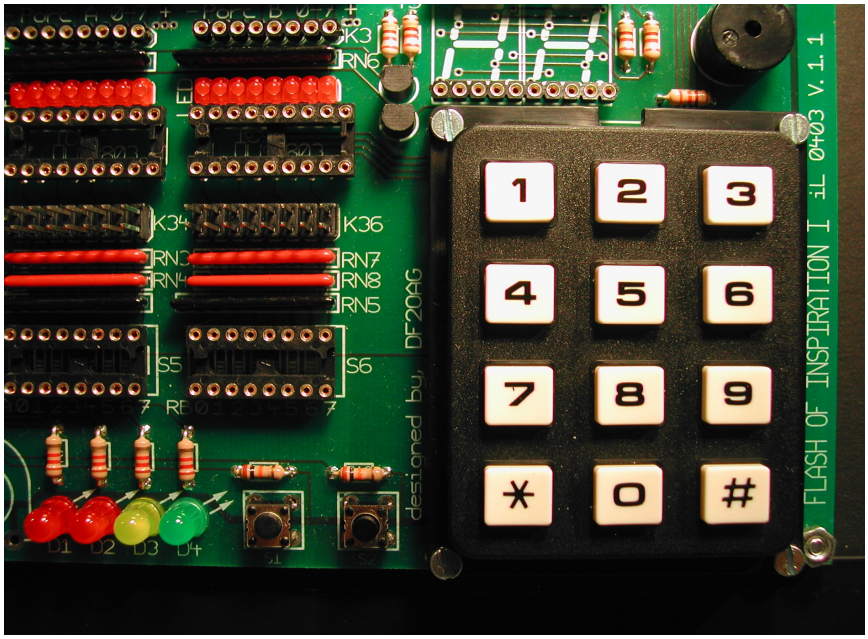
When mounting the two miniature relais (Rel1 and Rel2) it is important to find out the right position. Pin 1 shows north east. The pin marker on the relais is a small bar. The relais are turned by 180° degrees so that labeling is upside down.



3. Step
Mounting all other components
3 x 4 matrix keypad

For mounting the keypad you need 4 screws M2,5 10mm to 15mm long. Now put the screws through the keypad's mounting holes and fix each with two srew nut. These nuts are for right spacing. Put the keypad right throuh the mounting holes onto the pcb and fix it with four srew nuts on the solder side. Shorten the keypad's terminal pins and solder them.





3. Step
Mounting all other components
button S1 and S2

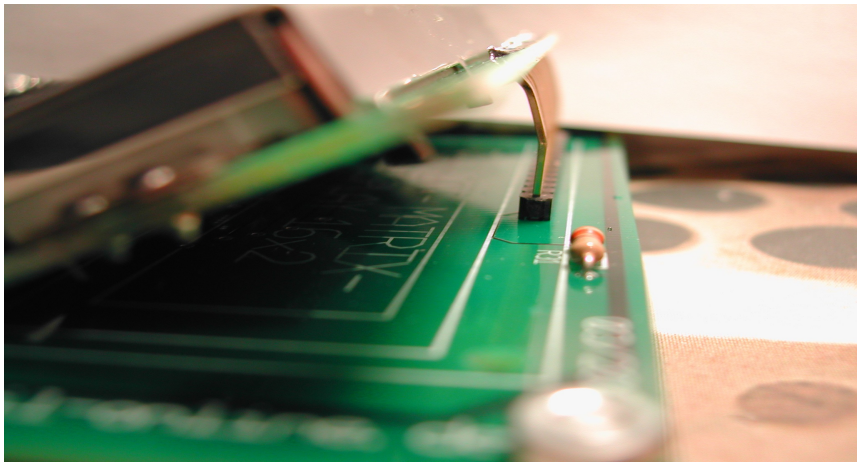
For proper function of these buttons you should take care of their orientation. The upper pads are connected via pull up resistor to Vdd, the lower pads to ground. With an ohmmeter or resistance tester you must check out which pair of pins are connected together without pressing the button. The paired pins must align horizontally. When pushing the button you get a connection from the upper to the lower pair of pins.

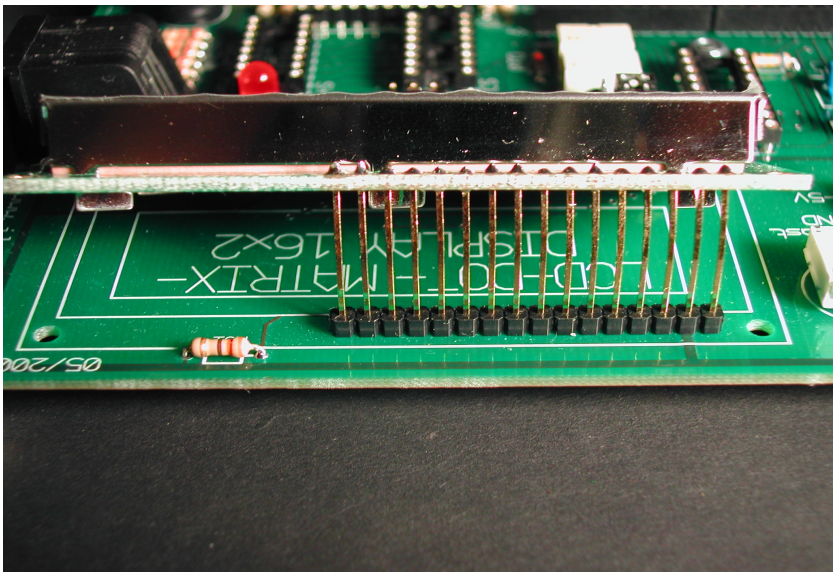
Alternative procedure:
It might be easier if led D1 to D4 are already built in. Wiring a connection from terminal S1 to D1. Led D1 is shining weak if the board is powered by 12 V. Put in button S1. Everything is ok, if led D1 is still shining. By pushing button S1 led D1 must turn off. In this case you can solder button S1, otherwise you must turn it by 90° to check it again. For mounting button S2 connect terminal S2 to D1 and repeat the procedure as described.

3. Step
Mounting all other components
All components for connecting the lcd

Now you must mount the remaining components. There should be no problem. When inserting the transistors, leds and miniature speaker take care for right alignment (polarity). The pcb imprint helps you to find the right orientation.

It is recommended to mount the lcd not parallel to the pcb but slant. Such a position makes it much easier and comfortable to read the lcd. First shorten the pin connectors to the right length. Use 16 pins when having lcd with backlight, otherwise 14 pins. Solder it on pcd K10 if lcd's connector is on its lower left side, otherwise above. Now put lcd in the desired position (angle) and fix it with solder tin. Optimize lcd's position and solder the remaining pins. Shorten the pins.



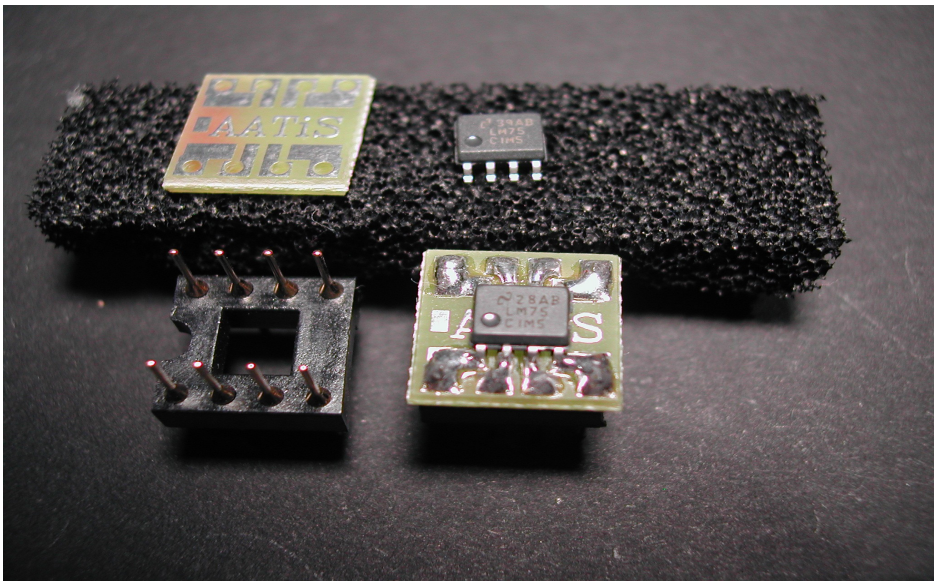


4. Step
Insertion of the components being on sockets and first start-up

Finally inserting the components into their sockets finishes the components mounting.
The pcb's impact guides you to assign the integrated circuits. Take care of their orientation. The notch on pcb's impact corresponds with the device's notch. Insertation of new devices becomes much easier if you push its pins to a angle of 90°. Be carful!

The seven segment displays should be inserted only if necessary.

The LM75 is only available in a SO8 package. Without any adaptor you can't insert it in a dip socket. Put the adaptor pcb on the dip socket IC1. Take care of right orientation and matching. Put eight small wires through the adaptor holes and shove them into the dip socket as far as possible. Solder these eight wires carefully. If you heat up to much, the socket's plastic will melt. Cut the wires rising above. Put the LM75 on the adaptor pcb. Take care of right orientation. Fix one pin and shove the device in an optimized position. Solder the remaining pins. Use as less solder tin as possible.



The LM75 module is composed of three components

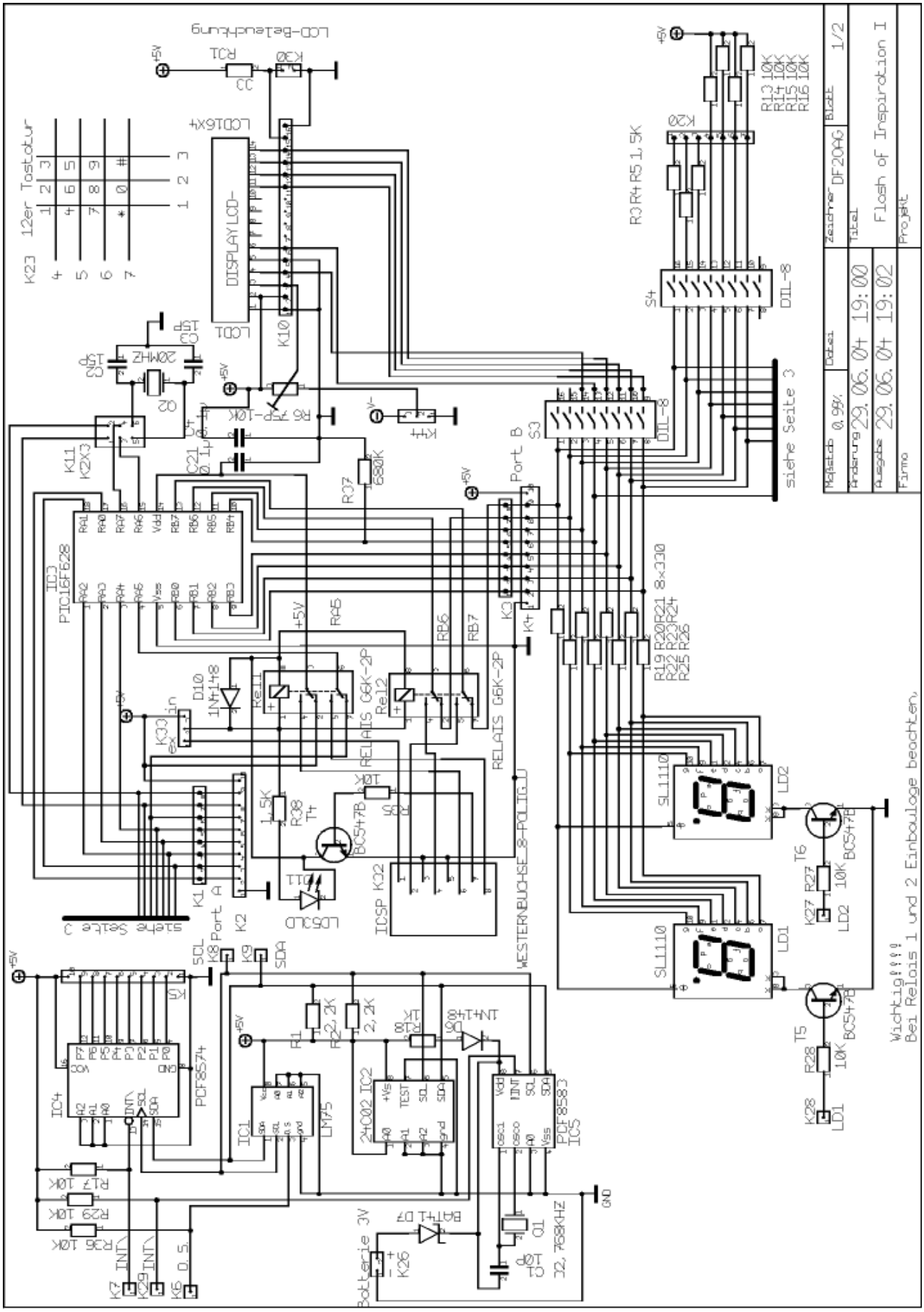
At the end you must set the required jumpers. The basic configuration is:

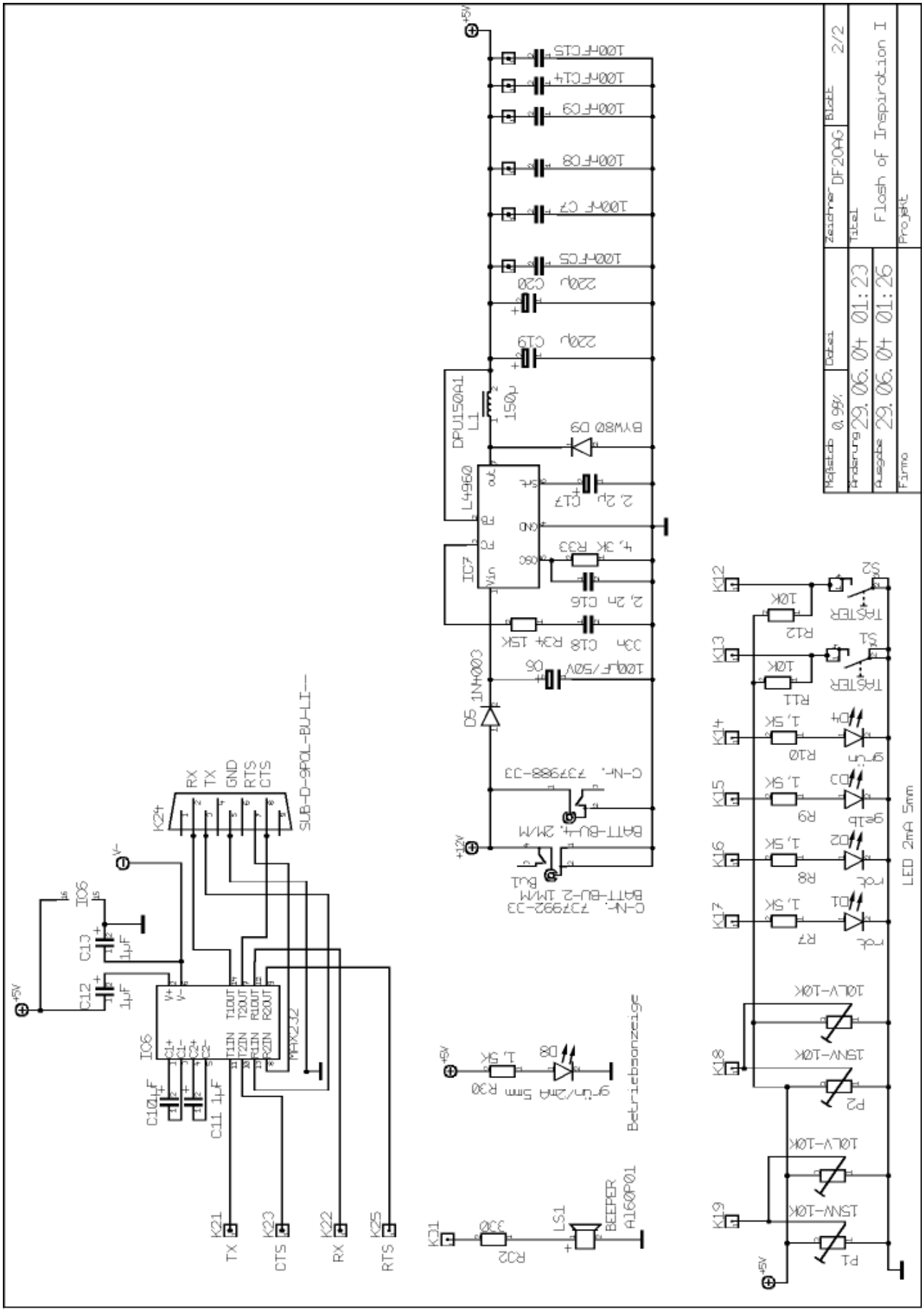
K44	GND	-middle pin, for normal lcd contrasts
K11	I/O	-middle pin, port pin RA,6 and RA,7 are regular io pins
K33	in	-middle pin, relais are powered by pcb power supply (during programming)
K34+K36	open, plug in jumper just on one pin	

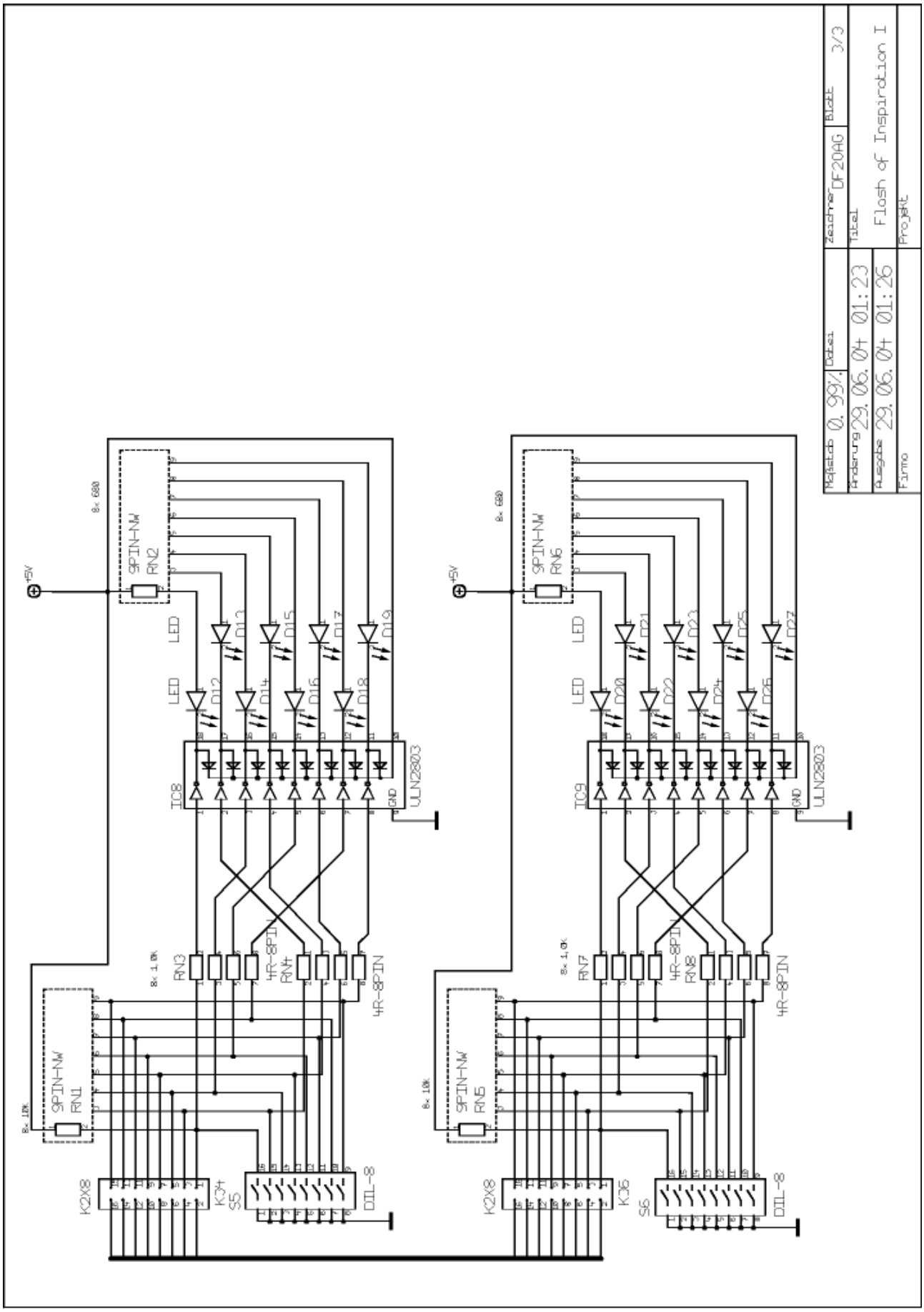
S3-S6	all dip switches are open

Along with this basic configuration you can start-up the evaluation board „Flash Of Inspiration I“. If you own the usb programer iL_ISP_U (www.iL-online.de) you can download the first example program.

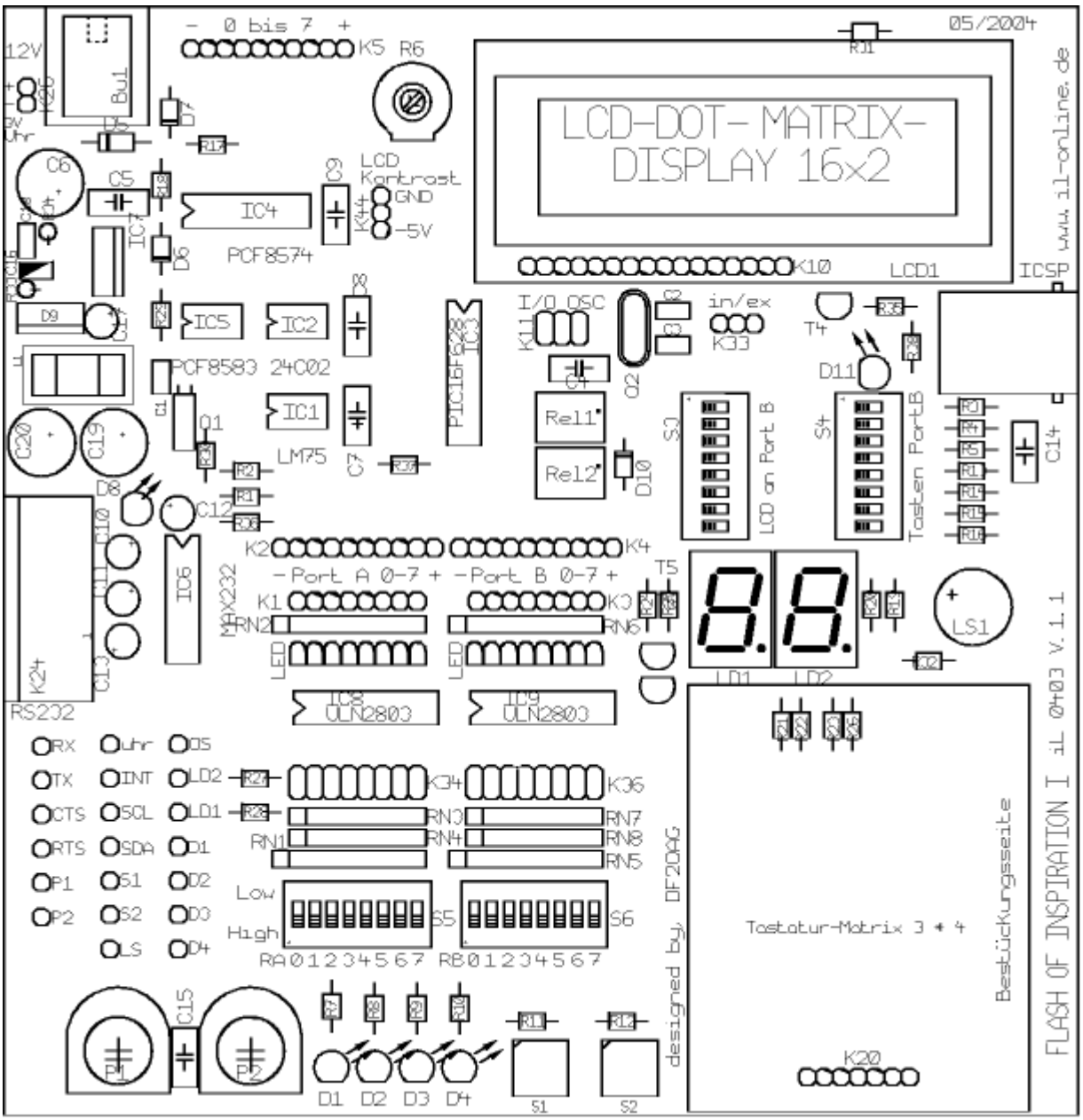
Documentation, schematics, tips etc.







Layout diagram



Components list for „Flash of Inspiration“ release 1.1 05/2004

name;	value;	package;
Bu1;	BATT-BU-2.1M/M;	BATT-BU-2.1; **either**
Bu2;	BATT-BU-4.2M/M;	BATT-BU-4.2; **or**
C1;	10pF;	C1;
C2;	15P;	C1;
C3;	15pF;	C1;
C4;	0.1µF;	C2;
C5;	100nF;	C2;
C6;	100µF/50V;	ELKO5-10;
C7;	100nF;	C2;
C8;	100nF;	C2;
C9;	100nF;	C2;
C10;	1µF;	ELKO1;
C11;	1µF;	ELKO1;
C12;	1µF;	ELKO1;
C13;	1µF;	ELKO1;
C14;	100nF;	C2;
C15;	100nF;	C2;
C16;	2,2nF;	C1;
C17;	2,2µF ;	ELKO2.5-5;
C18;	33nF;	C1;
C19;	220µF;	ELKO5-10;
C20;	220µF;	ELKO5-10;
C21;	0.1µF;	0805;
D1;	red/5mm 2mA	LED1ST
D2;	red/5mm 2mA;	LED1ST
D3;	yellow/5mm 2mA;	LED1ST
D4;	green/5mm 2mA;	LED1ST
D5;	1N4003;	D4;
D6;	1N4148;	D3;
D7;	BAT41;	D3;
D8;	green/2mA 5mm;	LED1ST;
D9;	BYW80;	TO-220AC;
D10;	1N4148;	D3;
D11;	red/5mm 2mA	LED1ST
D12;	LED;	LED1-8MM_KINGBRIGHT;
D13;	LED;	LED1-8MM_KINGBRIGHT;
D14;	LED;	LED1-8MM_KINGBRIGHT;
D15;	LED;	LED1-8MM_KINGBRIGHT;
D16;	LED;	LED1-8MM_KINGBRIGHT;
D17;	LED;	LED1-8MM_KINGBRIGHT;
D18;	LED;	LED1-8MM_KINGBRIGHT;
D19;	LED;	LED1-8MM_KINGBRIGHT;

D20; LED; LED1-8MM_KINGBRIGHT;
D21; LED; LED1-8MM_KINGBRIGHT;
D22; LED; LED1-8MM_KINGBRIGHT;
D23; LED; LED1-8MM_KINGBRIGHT;
D24; LED; LED1-8MM_KINGBRIGHT;
D25; LED; LED1-8MM_KINGBRIGHT;
D26; LED; LED1-8MM_KINGBRIGHT;
D27; LED; LED1-8MM_KINGBRIGHT;

IC1; LM75; DIL8;
IC2; 24C02; DIL8;
IC3; PIC16F628; DIL18;
IC4; PCF8574; DIL16;
IC5; PCF8583; DIL8;
IC6; MAX232; DIL16;
IC7; L4960; TO-220/7;
IC8; ULN2803; DIL18;
IC9; ULN2803; DIL18;

K1; K1X8; 1X08; ic socket stripes
K2; K1X10; 1X10; female connector
K3; K1X8; 1X08; ic socket stripes
K4; K1X10; 1X10; female connector
K5; K1X10; 1X10; female connector
K11; K2X3; 2X03; pin stripes, 2 rows
K24; SUB-D-9POL-BU-LI--; SUB-D-9-BU-LI;
K26; K1X2; 1X02; pin stripes, 1 row
K32; western connector 8 pins; WESTERN8U;
K33; K1X3; 1X03;ic socket stripes, 1 row
K34; K2X8; 2X08; pin stripes, 2 rows
K36; K2X8; 2X08;Stiftleiste 2 polig
K44; K1X3; 1X03;pin stripes, 1 row

L1; 150µ; core 12,5;

LCD1; LCD16X4; LCD16X2;

LD1; SL1110; 7SEGM13A;
LD2; SL1110; 7SEGM13A;

LS1; BEEPER; BEEPER;

P1; 15NV-10K; PT15LV;
P2; 15NV-10K; PT15LV;

Q1; 32,768KHZ; MINI;
Q2; 20MHZ ; HC-18U;

R1; 2,2K; R3;
R2; 2,2K; R3;

R3; 1,5K ; R3;
R4; 1,5K ; R3;
R5; 1,5K ; R3;
R6; 75P-10K; POTI7-L;
R7; 1,5K ; R3;
R8; 1,5K ; R3;
R9; 1,5K ; R3;
R10; 1,5K ; R3;
R11; 10K ; R3;
R12; 10K ; R3;
R13; 10K ; R3;
R14; 10K ; R3;
R15; 10K ; R3;
R16; 10K ; R3;
R17; 10K ; R3;
R18; 1K ; R3;
R19; 330; R3;
R20; 330; R3;
R21; 330; R3;
R22; 330; R3;
R23; 330; R3;
R24; 330; R3;
R25; 330; R3;
R26; 330; R3;
R27; 10K ; R3;
R28; 10K ; R3;
R29; 10K ; R3;
R30; 1,5K ; R3;
R31; 33 ; R3;
R32; 330; R3;
R33; 4,3K; R1;
R34; 15K ; R1;
R35; 10K ; R3;
R36; 10K ; R3;
R37; 680K ; R3;
R38; 1,5K ; R3;
R39; 10LV-10K; PT10LV;
R40; 10LV-10K; PT10LV;

RN1; 9-SIL-1;10k 9PIN-NW;
RN2; 9-SIL-1;680 9PIN-NW;
RN3; 8-SIL-1;1k 4R-8PIN;
RN4; 8-SIL-1;1k 4R-8PIN;
RN5; 9-SIL-1;10k 9PIN-NW;
RN6; 9-SIL-1;680 9PIN-NW;
RN7; 8-SIL-1;1k 4R-8PIN;
RN8; 8-SIL-1;1k 4R-8PIN;

Rel1; G6K-2P; RELAIS G6K-2P;
Rel2; G6K-2P; RELAIS G6K-2P;

S1; TASTER; T1.4;
S2; TASTER; T1.4;
S3; DIL-8; DSS-08;
S4; DIL-8; DSS-08;
S5; DIL-8; DSS-08;
S6; DIL-8; DSS-08;

T4; BC547B; TO-92;
T5; BC547B; TO-92;
T6; BC547B; TO-92;

Purchase list for „Flash of Inspiration“ release 1.1 05/2004

name;	value;	package;	distributor;	order number;	price in Euro (value 05/2004)
R31;	33 ;	R3;	Reichelt;	1/4W 33;	0,033€
R26;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R23;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R32;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R25;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R22;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R24;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R21;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R20;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R19;	330;	R3;	Reichelt;	1/4W 330;	0,033€
R18;	1K ;	R3;	Reichelt;	1/4W 1k;	0,033€
R2;	2,2K;	R3;	Reichelt;	1/4W 2,2k;	0,033€
R1;	2,2K;	R3;	Reichelt;	1/4W 2,2k;	0,033€
R8;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R3;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R10;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R5;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R7;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R9;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R38;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R4;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R30;	1,5K ;	R3;	Reichelt;	1/4W 1,5k;	0,033€
R12;	10K ;	R3;	Reichelt;	1/4W 10k	0,033€
R11;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R35;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R36;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R13;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R28;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R16;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R14;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R17;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R29;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R15;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R27;	10K ;	R3;	Reichelt;	1/4W 10k;	0,033€
R34;	15K ;	R3;	Reichelt;	1/4W 15k;	0,033€
R33;	4,3K;	R3;	Reichelt;	1/4W 4,3k;	0,033€
R37;	680K ;	R3;	Reichelt;	1/4W 680k;	0,033€
RN1;	9PIN-NW;	9-SIL-1;10k;	Reichelt;SIL9-8 10k;		0,12€
RN5;	9PIN-NW;	9-SIL-1;10k;	Reichelt;SIL9-8 10k;		0,12€
RN2;	9PIN-NW;	9-SIL-1;680;	Reichelt;SIL9-8 680;		0,12€
RN6;	9PIN-NW;	9-SIL-1;680;	Reichelt;SIL9-8 680;		0,12€
RN3;	4R-8PIN;	8-SIL-1;1k;	Reichelt,SIL8-4 1k;		0,14€
RN4;	4R-8PIN;	8-SIL-1;1k;	Reichelt,SIL8-4 1k;		0,14€

RN7;	4R-8PIN;	8-SIL-1;1k;	Reichelt,SIL8-4 1k;		0,14€
RN8;	4R-8PIN;	8-SIL-1;1k;	Reichelt,SIL8-4 1k;		0,14€
C1;	10pF;	C1;	Reichelt;	Kerko 10p;	0,04
C3;	15pF;	C1;	Reichelt;	Kerko 15p;	0,04
C2;	15pF;	C1;	Reichelt;	Kerko 15p;	0,04
C16;	2,2n;	C1;	Reichelt;	Kerko 2,2n;	0,06
C18;	33n;	C1;	Reichelt;	Z5U-2,5 33N;	
	0,05				
C4;	100nF;	C2;	Reichelt;	X7R-5 100n;	0,12
C5;	100nF;	C2;	Reichelt;	X7R-5 100n;	0,12
C15;	100nF;	C1;	Reichelt;	X7R-5 100n;	0,12
C8;	100nF;	C2;	Reichelt;	X7R-5 100n;	0,12
C7;	100nF;	C2;	Reichelt;	X7R-5 100n;	0,12
C14;	100nF;	C2;	Reichelt;	X7R-5 100n;	0,12
C12;	1µF;	ELKO1;	Reichelt;	rad 1/63;	0,04
C10;	1µF;	ELKO1;	Reichelt;	rad 1/63;	0,04
C11;	1µF;	ELKO1;	Reichelt;	rad 1/63;	0,04
C13;	1µF;	ELKO1;	Reichelt;	rad 1/63;	0,04
C17;	2,2µ ;	ELKO2.5-5;	Reichelt;	rad 2,2/63;	0,04
C6;	100µF/50V;	ELKO5-10;	Reichelt;	RAD105 100/63;	0,09
C20;	220µ ;	ELKO5-10;	Reichelt	RAD105;220/63;	0,10
C19;	220µ ;	ELKO5-10;	Reichelt	RAD105;220/63;	0,10
L1;	150µH	core12,5;	Schukat;	DPU150A1;	**
D5;	1N4003;	D4;	Reichelt;	1N4003;	0,02
D10;	1N4148;	D3;	Reichelt;	1N4148;	0,02
D6;	1N4148;	D3;	Reichelt;	1N4148;	0,02
D7;	BAT41;	D3;	Reichelt;	BAT 41;	0,11
D9;	BYW80;	TO-220AC;	Reichelt;	BYW80/100;	0,66;**
D11;	red/2mA;	LED1ST;	Reichelt;	LED 5mm 2MA rd;	0,09
D3;	yell/2mA;	LED3ST;	Reichelt;	LED 5mm 2MA ye;	0,09
D4;	green/2mA;	LED3ST;	Reichelt;	LED 5mm 2MA gn;	0,09
D8;	green/2mA;	LED3ST;	Reichelt;	LED 5mm 2MA gn;	0,09
D2;	red/2mA;	LED3ST;	Reichelt;	LED 5mm 2MA rd;	0,09
D1;	red/2mA;	LED3ST;	Reichelt;	LED 5mm 2MA rd;	0,09
D12-D27;	Mini-LED;	Mini-LED;	Reichelt;	LED 1,8mm rd;	0,10€/St
Q1;	32,768KHZ;	MINI;	Reichelt;	0,032768-L6;	0,25
Q2;	20MHZ ;	HC-18U;	Reichelt;	20-HC18;	0,44
IC2;	24C02;	DIL8;	Reichelt;	ST24C02 BN6;	0,35
IC7;	L4960;	TO-220/7;	Reichelt;	L4960;	2,65
IC6;	MAX232;	DIL16;	Reichelt;	MAX 232 CPE;	0,75
IC4;	PCF8574;	DIL16;	Reichelt;	PCF8574 P;	2,40
IC5;	PCF8583;	DIL8;	Reichelt;	PCF8583 P;	3,25
IC3;	PIC16F628;	DIL18;	Reichelt;	PIC16F628-20P;	3,90
IC1;	LM75CIM5;	SO8 with adaptor;	Conrad;	165891-33;	3,55€
or	LM75CIM5;	SO8 with adaptor;	Reichelt	LM75 SMD;	2,10€

T4;	BC547B;	TO-92;	Reichelt;	BC 547B;	0,03
T5;	BC547B;	TO-92;	Reichelt;	BC 547B;	0,03
T6;	BC547B;	TO-92;	Reichelt;	BC 547B;	0,03
P1;	15NV-10K;	POTI10-L;	Conrad;	432024-33;	0,41
P2;	15NV-10K;	POTI10-L;	Conrad;	432024-33;	0,41
R6;	75P-10K;	POTI7-L;	Reichelt;	RT10-L 10k;	0,13
K24;	SUB-D-9POL-BU-LI--;SUB-D-9-BU-LI;		Reichelt;	D-SUB BU 09EU;	0,50
K32;	western connector 8 pins;		Reichelt;	MEBP 8-8S;	0,41
LCD1;	LCD16X4;	LCD16X2;	Reichelt;	LCD 162C LED;	12,70
LD2;	SL1110;	7SEGM13A;	Reichelt;	SC52-11 rt;	0,64
LD1;	SL1110;	7SEGM13A;	Reichelt;	SC52-11 rt;	0,64
Bu1;	BATT-BU-2.1M/M;BATT-BU-2.1;		Conrad;	737992-33;	1,25€
or Bu1;	SV-Buchse;		Reichelt;	HEBW 21;	0,17€
LS1;	BEEPER;	BEEPER;	Schukat;	AL60P01;	**
S3;	DIL-8;	DSS-08;	Reichelt;	NT 08;	0,61
S4;	DIL-8;	DSS-08;	Reichelt;	NT 08;	0,61
S5;	DIL-8;	DSS-08;	Reichelt;	NT 08;	0,61
S6;	DIL-8;	DSS-08;	Reichelt;	NT 08;	0,61
S2;	TASTER;	T1.4;	Reichelt;	Taster 9302;	0,15€
S1;	TASTER;	T1.4;	Reichelt;	Taster 9302;	0,15€
S3;	DIL-8;	DSS-08;DIP-Schalter;	Reichelt;	NT-08;	0,40€
S4;	DIL-8;	DSS-08;DIP-Schalter;	Reichelt;	NT-08;	0,40€
S5;	DIL-8;	DSS-08;DIP-Schalter;	Reichelt;	NT-08;	0,40€
S6;	DIL-8;	DSS-08;DIP-Schalter;	Reichelt;	NT-08;	0,40€
Rel1;	RELAIS G6K-2P;G6K-2P;		Reichelt;	G6K-2P 5V;	2,70€;**
Rel2;	RELAIS G6K-2P;G6K-2P;		Reichelt;	G6K-2P 5V;	2,70€;**

other components

distributor;	order number;	quantity;	price in Euro each	remarks
Reichelt;	GS 16P;	6x;	0,18€	
Reichelt;	GS 18P;	3x;	0,19€	
Reichelt;	GS 8P;	3x;	0,09€	
Reichelt;	AR8;	1x;	0,27€	-->socket for SO2DIP adaptor
Reichelt;	Buchsenl. 10G;	3x;	0,65€	
Reichelt;	StiftL.36G;	1x;	0,17€	
Reichelt;	StiftL.2X36G;	1x;	0,25€	
Reichelt;	SPL 64;	2x;	0,97€	
Reichelt;	JUMPER SW;	4x;	0,04€	
Reichelt;	JUMPER GL-SW;	16x;	0,05€	
Reichelt;	connectors 20;	1x;	1,00€	-->to slope LC-display .
Reichelt;	SZK M2,5x10;	1 Pack=100Stk;	2,10€	-->srews 2,5mm 10mm long
Reichelt;	SK M2,5 ;	1 Pack=100 Stk;	1,10€	->nuts 2,5mm
Reichelt;	DK 5mm;	4x;	0,05€	->spacer platic 5mm long
Conrad;	709840-33;	1x;	5,60€	->keypad 3x4 matrix
Conrad;	425419-33;	2x;	0,13€	->shaft for P1 and P2

AATIS; SO2DIL8-Adapter;(siehe www.aatis.de);**
or il0406 SO2DIL8 adaptor; (see iL-online.de); **

**** these components are part of the delivery. No extra purchase is needed.**

Homepages
AATIS: www.aatis.de
Conrad: www.conrad.de
Reichelt: www.reichelt.de
Ing. Büro Stefan Lehmann: www.il-online.de

Flash of Inspiration I
User's Hints

Using seven segment displays and lcd at the same time (in the same application) it not possible.

The lcd can only be connected at port RB.

No characters appear on lcd but power is on and back light is on. Please check:

1. Jumper K44 should be set „middle pin" to „gnd pin".
2. Turn contrast potentiometer R6 from left to right. Characters, at least black blocks should be visible.
3. If only black blocks are visible, although the program is serving the lcd, it could be a problem of timing. Please refer „iL_BAS16 manual" for deails (lcddelay). Put all switches of S3 to ON.

Dip switches S5 and S6 can drive the corresponding port pin with high or low voltage. To avoid damage take care and drive with low voltage only those pins that are configured as input.

Get the highest profit of „Flash Of Inspiration I" and read Microchip's datasheet of PIC 16F628, carefully. This and other data sheets are available for download on www.microchip.com. Search engines like „Google" find the data sheets of PCF8583, LM75 etc.

Please send your suggestions, wishes of improvments or discrepancies by email to: SL@iL-online.de (ref. Aufbauanleitung-v1-1gm)