

Total solder points: 1400

Difficulty level:

*beginner* 1  2  3  4  5  *advanced*

HIGH-Q  
**velleman-kit** 

**K5600**

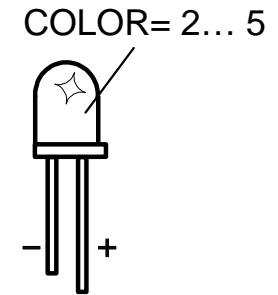
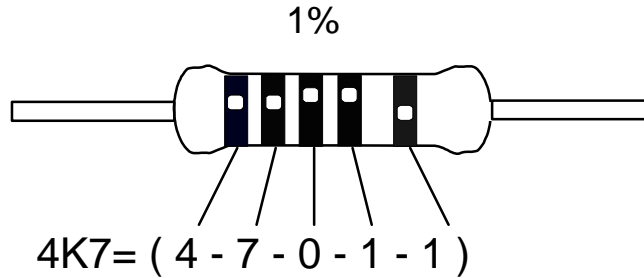
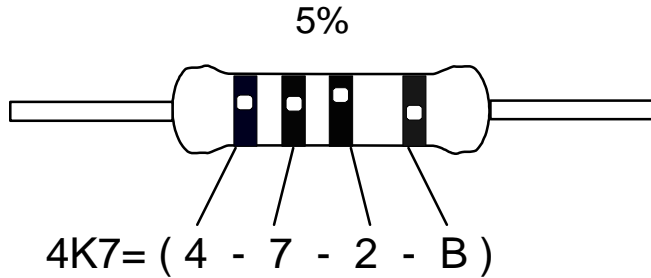
# ADVERTISEMENT LED DISPLAY

- Create your own message for personal advertisements.
- Can be used for home, shop, car or truck...
- 12 self definable characters.
- 150 bright LED's supplied with the kit.
- Many spectacular light effects on the message, (scrolling, blinking, rolling, panning...).
- Adjustable effect speed.
- Vertical or horizontal position possible
- Fixed displaying is possible (no effects).
- Different displays can be synchronised, to create longer messages, or to create giant advertisements.
- Special housing available order nr: B5600
- Extra LED's available, order nr: K/LEDHR (red) and K/LEDHG (green)

## Specifications

- 12 character positions
- 5 x 7 LED matrix for each character
- Bright LED's, 60 to 80mcd
- Microprocessor technology
- Oscillator output for synchronisation with other display(s) (master / slave configuration)
- Power supply: 12 to 28VDC (adapter type PS1208 for Europe)
- Reverse polarity protected
- Consumption: 760mA
- Dimensions: 80mm x 473mm

modifications reserved



C O D E	I	P	E	SF	S	DK	N	D	GB	F	NL	C O D E
	<i>CODICE COLORE</i>	<i>CODIGO DE CORES</i>	<i>CODIGO DE COL- ORES</i>	<i>VÄRI KOODI</i>	<i>FÄRG SCHEMA</i>	<i>FARVE KODE</i>	<i>FARGE KODE</i>	<i>FARB KODE</i>	<i>COLOUR CODE</i>	<i>CODIFI- CATION DES COU- LEURS</i>	<i>KLEUR KODE</i>	
0	Nero	Preto	Negro	Musta	Svart	Sort	Sort	Schwarz	Black	Noir	Zwart	0
1	Marrone	Castanho	Marrón	Ruskea	Brun	Brun	Brun	Braun	Brown	Brun	Bruin	1
2	Rosso	Encarnado	Rojo	Punainen	Röd	Rød	Rød	Rot	Red	Rouge	Rood	2
3	Aranciato	Laranja	Naranjado	Oranssi	Orange	Orange	Orange	Orange	Orange	Orange	Oranje	3
4	Giallo	Amarelo	Amarillo	Keltainen	Gul	Gul	Gul	Gelb	Yellow	Jaune	Geel	4
5	Verde	Verde	Verde	Vihreä	Grön	Grøn	Grønn	Grün	Green	Vert	Groen	5
6	Blu	Azul	Azul	Sininen	Blå	Blå	Blå	Blau	Blue	Blue	Blauw	6
7	Viola	Violeta	Morado	Purppura	Lila	Violet	Violet	Violet	Purple	Violet	Paars	7
8	Grigio	Cinzeno	Gris	Harmaa	Grå	Grå	Grå	Grau	Grey	Gris	Grijs	8
9	Bianco	Branco	Blanco	Valkoinen	Vit	Hvid	Hvidt	Weiss	White	Blanc	Wit	9
A	Argento	Prateado	Plata	Hopea	Silver	Sølv	Sølv	Silber	Silver	Argent	Zilver	A
B	Oro	Dourado	Oro	Kulta	Guld	Guld	Guldl	Gold	Gold	Or	Goud	B

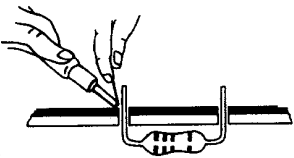

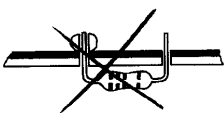
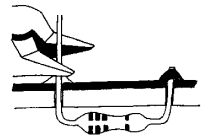
## ASSEMBLY STEPS

### Required tools to assemble the kit:

Use a small soldering iron of max. 40W.

Use thin (1mm) solder, do not use any flux.

Use a small cutter to trim the excess wires.

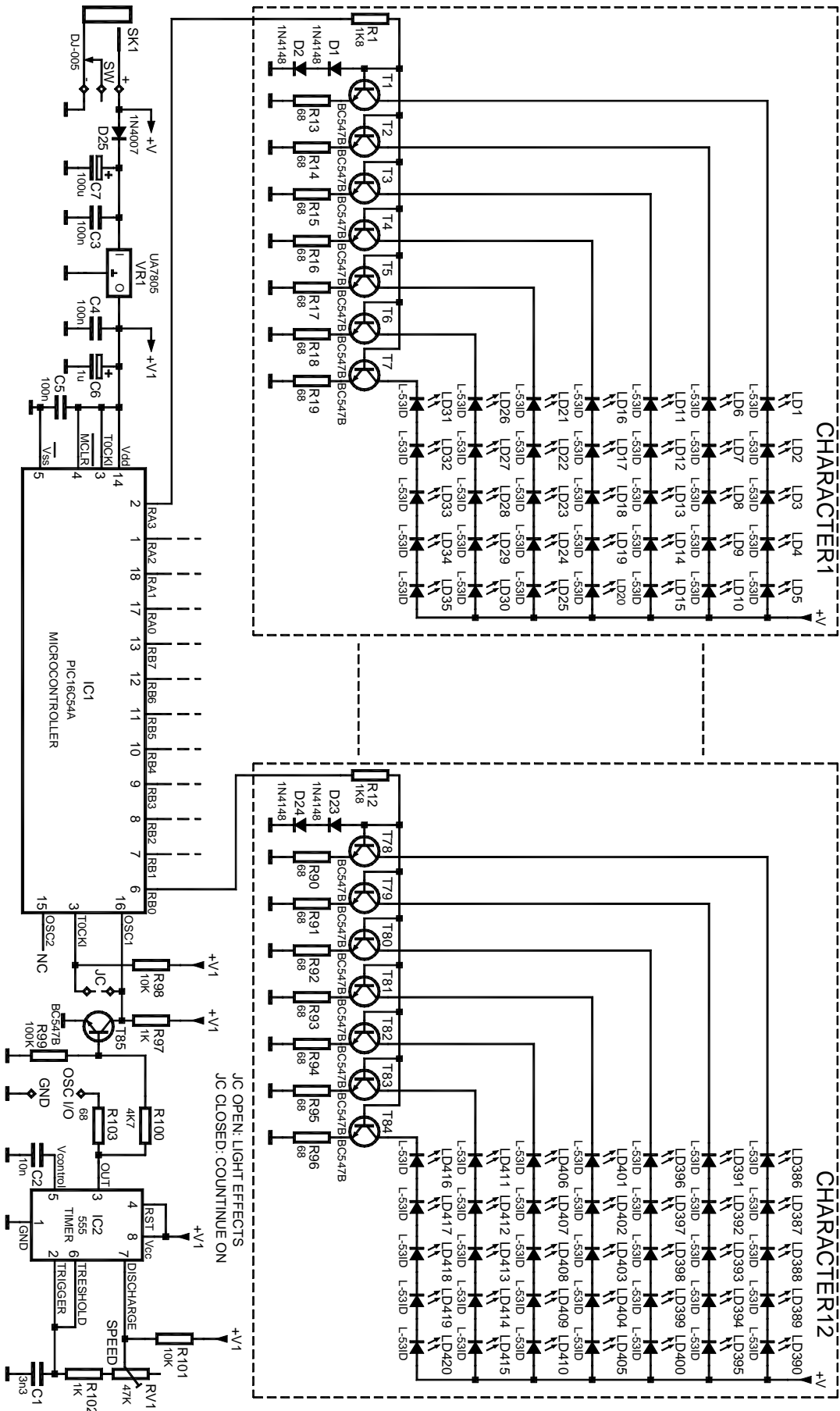
- |  |  |  |  |
|--|--|--|--|
|  <p><b>1.</b><br/>Mount the components against the PCB surface and carefully solder the leads in place.</p> |  <p><b>2.</b><br/>Obtain cone-shaped, shiny soldered joints by heating up the component leads sufficiently.</p> |  <p><b>3.</b><br/>This solder joint results in a bad connection.</p> |  <p><b>4.</b><br/>Trim the excess wires up to the level of the solder</p> |
|--|--|--|--|

- Careless assembly will certainly lead to problems.
  - Insert the part, oriented correctly, into its correct holes in the PCB.
  - Mount the components in the correct order as stated in this manual.
  - Do NOT remove the components from the tape, as they are in the correct mounting order.
  - The component values in the circuit diagram are for reference only. The values in this parts list are correct and must be followed.
  - Use the boxes  to check off your progress.
- ☞ Before starting to build, read also the general guidelines

### How the display is build:

1. Mount the components (sections 1 to 11).
2. Make a draft of your text, using the template on page 9. The display consists of 12 user definable characters. Depending on the wanted character, one must mount the LED's at the appropriate position, see page 7.
3. The not used LED positions, must then be shunted by means of a piece of jumpwire.

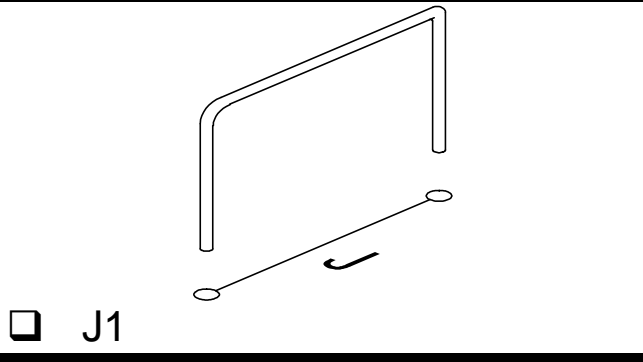
# DIAGRAM



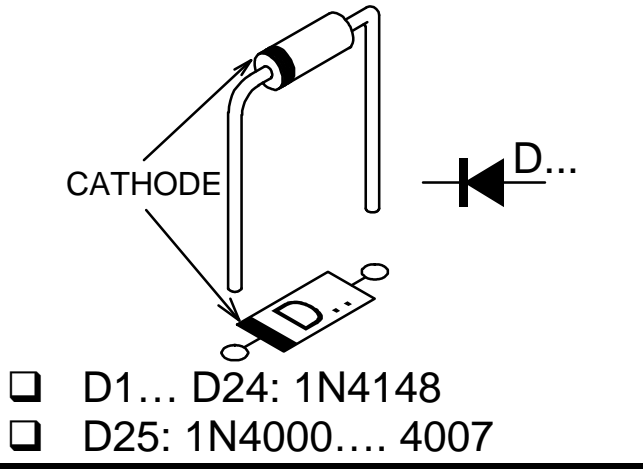
Values are for reference only



### 1. JUMPERS

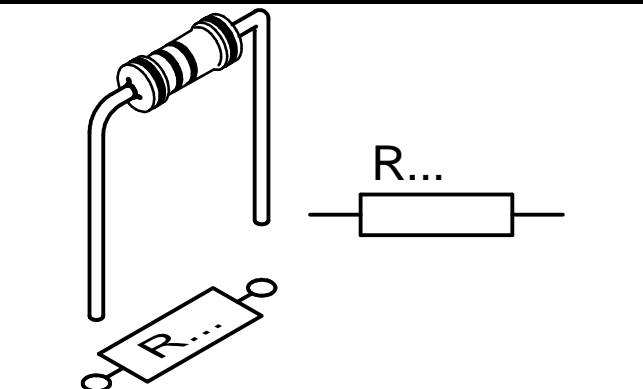


### 2. DIODES (Check the polarity!)



- D1... D24: 1N4148
- D25: 1N4000.... 4007

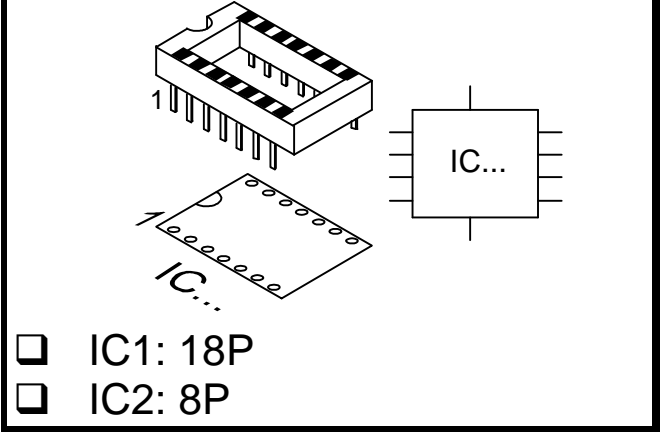
### 3. 1/4W RESISTORS



- R1... R12: 1K8 (1-8-2-B)
- R13... R96: 68 (6-8-0-B)
- R97: 1K (1-0-2-B)
- R98: 10K (1-0-3-B)
- R99: 100K (1-0-4-B)
- R100: 4K7 (4-7-2-B)
- R101: 10K (1-0-3-B)
- R102: 1K (1-0-2-B)
- R103: 68 (6-8-0-B)

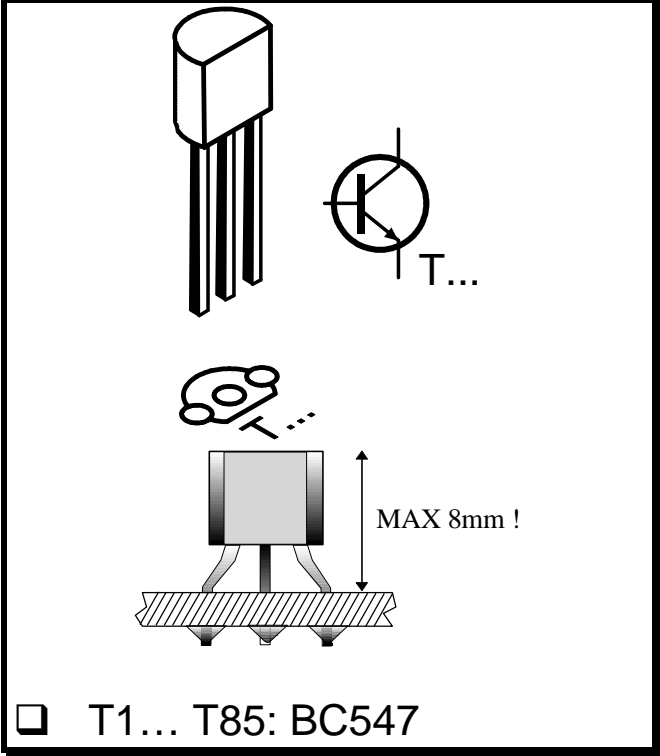
### 4. IC SOCKET

(Check the position of the notch!)



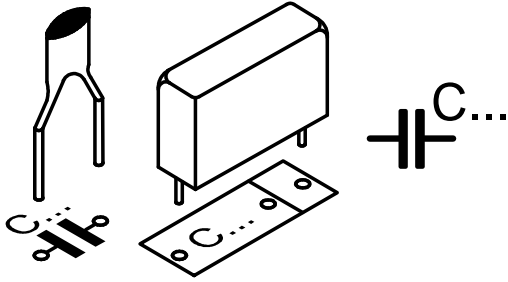
- IC1: 18P
- IC2: 8P

### 5. TRANSISTORS



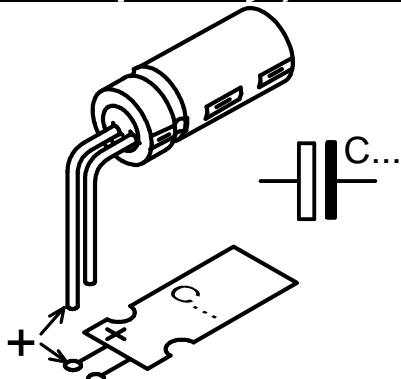
- T1... T85: BC547

## 6. CAPACITORS



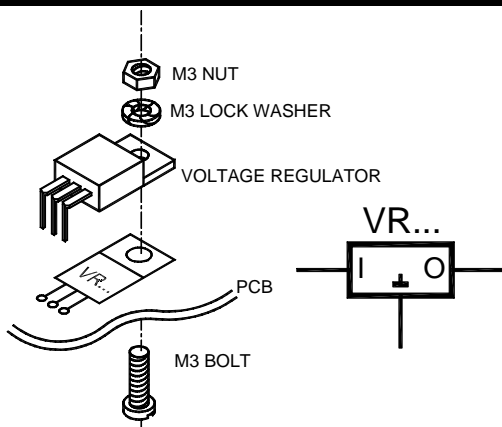
- C1: 3n3 (3300, 333)
- C2: 10n (10000, 103)
- C3: 100n ( $\mu$ 1, .1, 104)
- C4: 100n ( $\mu$ 1, .1, 104)
- C5: 100n ( $\mu$ 1, .1, 104)

## 7. ELECTROLYTIC CAPACITOR (Check the polarity!)



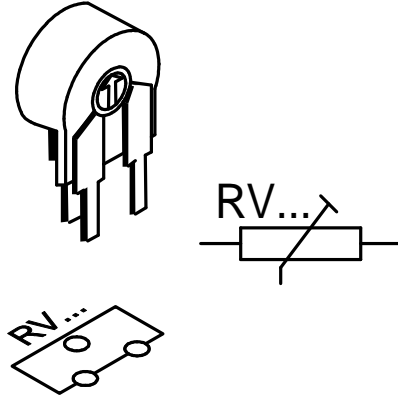
- C6: 1 $\mu$ F
- C7: 100 $\mu$ F

## 8. VOLTAGE REGULATOR



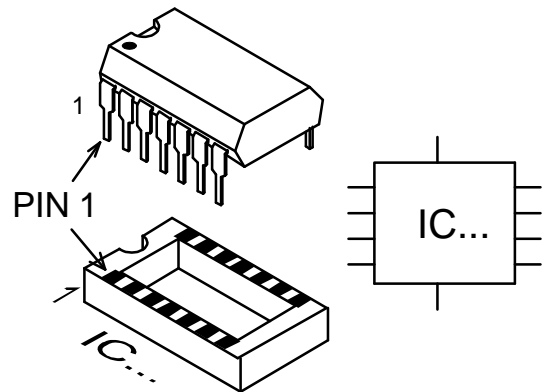
- VR1: 7805
- First fix the voltage regulator and then solder the leads!

## 9. RESISTOR TRIMMERS



- RV1: 47K (50K)

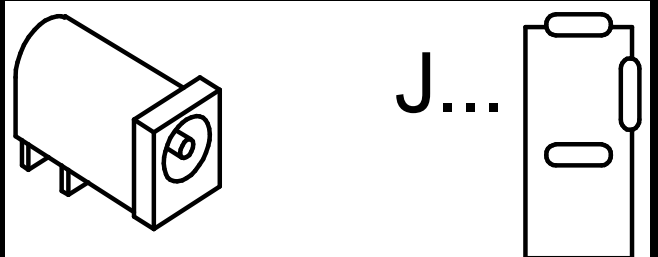
## 10. INSERT THE IC \* (Check the position of the notch!)



- IC1: VK5600
- IC2: 555 \*

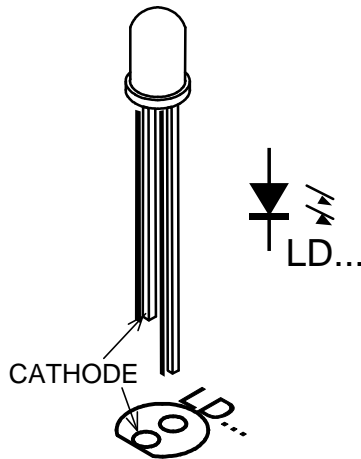
\* See also point 18 B for use in Master/Slave configuration.

## 11. DC CONNECTOR



- SK1: DJ005

## 12. LEDs (Check the polarity!)

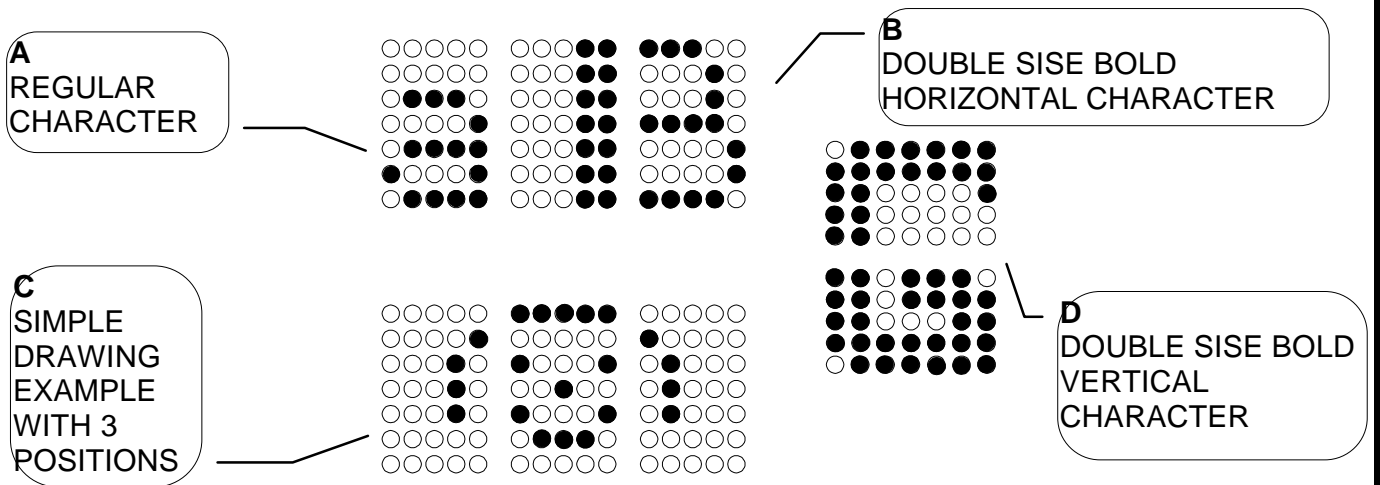


### □ LD1... LDxx type L-53ID or L-53SGD

The position of the LED's will determine each character.

The following list is only a guideline, other characters can be made, limited only by your imagination. Bold characters can be made by using two positions to create one character. When using the display vertically, it is best to use two positions per character.

Some examples:



### IMPORTANT:

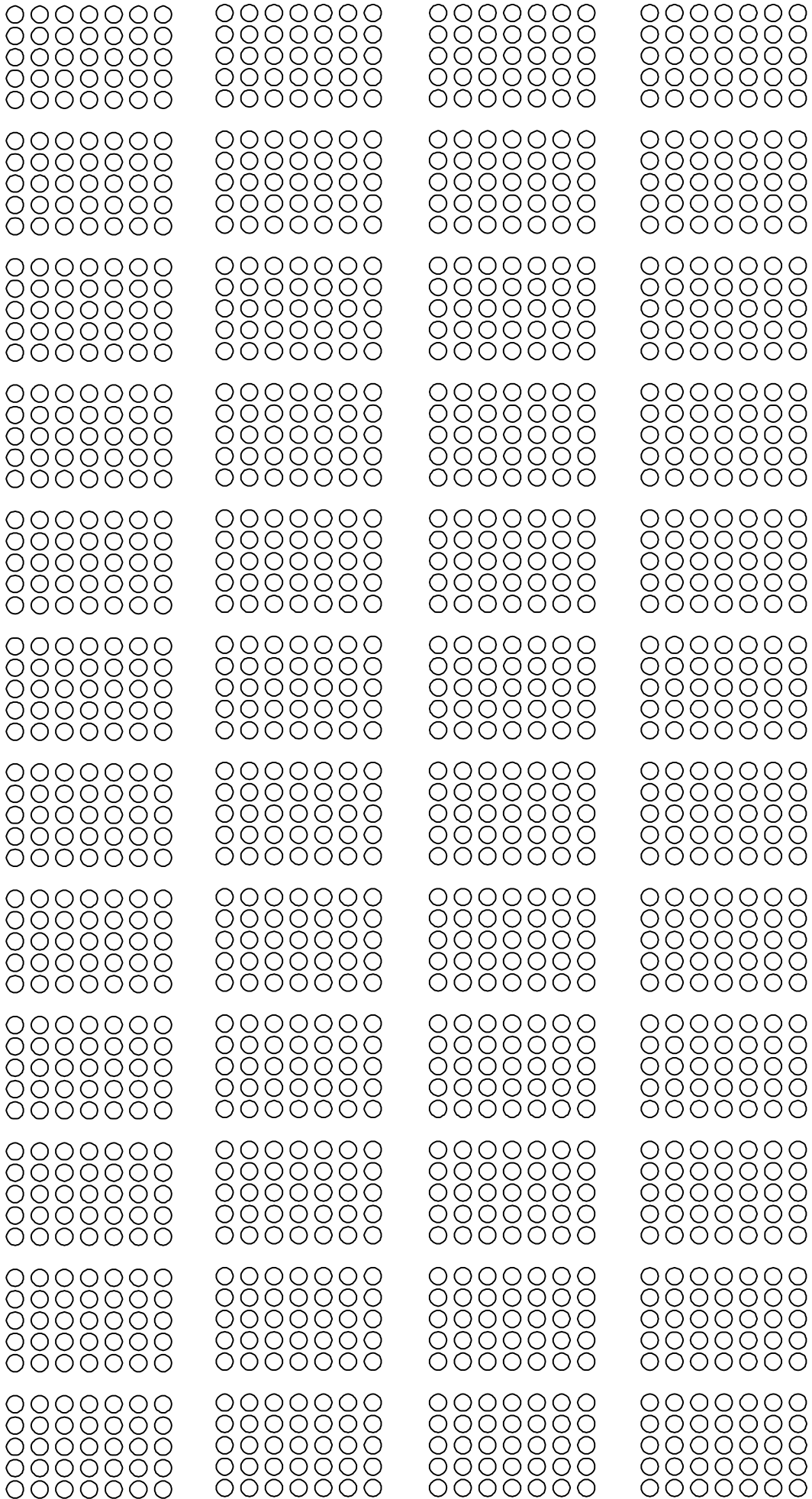
NOT USED LED POSITIONS MUST BE SHUNTED BY MEANS OF A PIECE OF JUMP WIRE, EVEN IF NO LED IS USED ON THE ROW, OTHERWISE SOME LED'S WILL NOT LIT UP OR WILL BE DIMMER THAN OTHER LED'S.

Tip: for experienced builders only: a shunt can be made by making a short circuit soldering point at a not used LED positions.

See table on next page,











**CONNECTION AND USE (continued from page 11)**

**C- Use as a fixed display:**

If no effects are wanted, and only a fixed message is needed, mount a jumpwire at position JC, next to IC1.

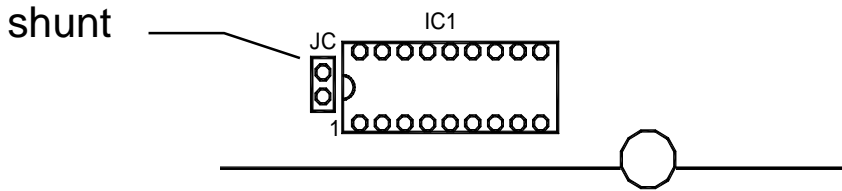


FIG 3

**D- Speed adjustment:**

The speed of the effects can be adjusted by means of RV1.

To adjust the speed in a master-slave configuration, only the master RV1 must be adjusted (This is the unit with IC2 mounted).

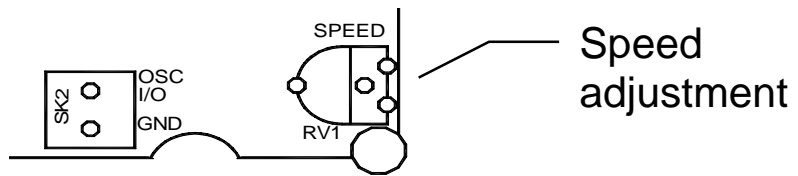
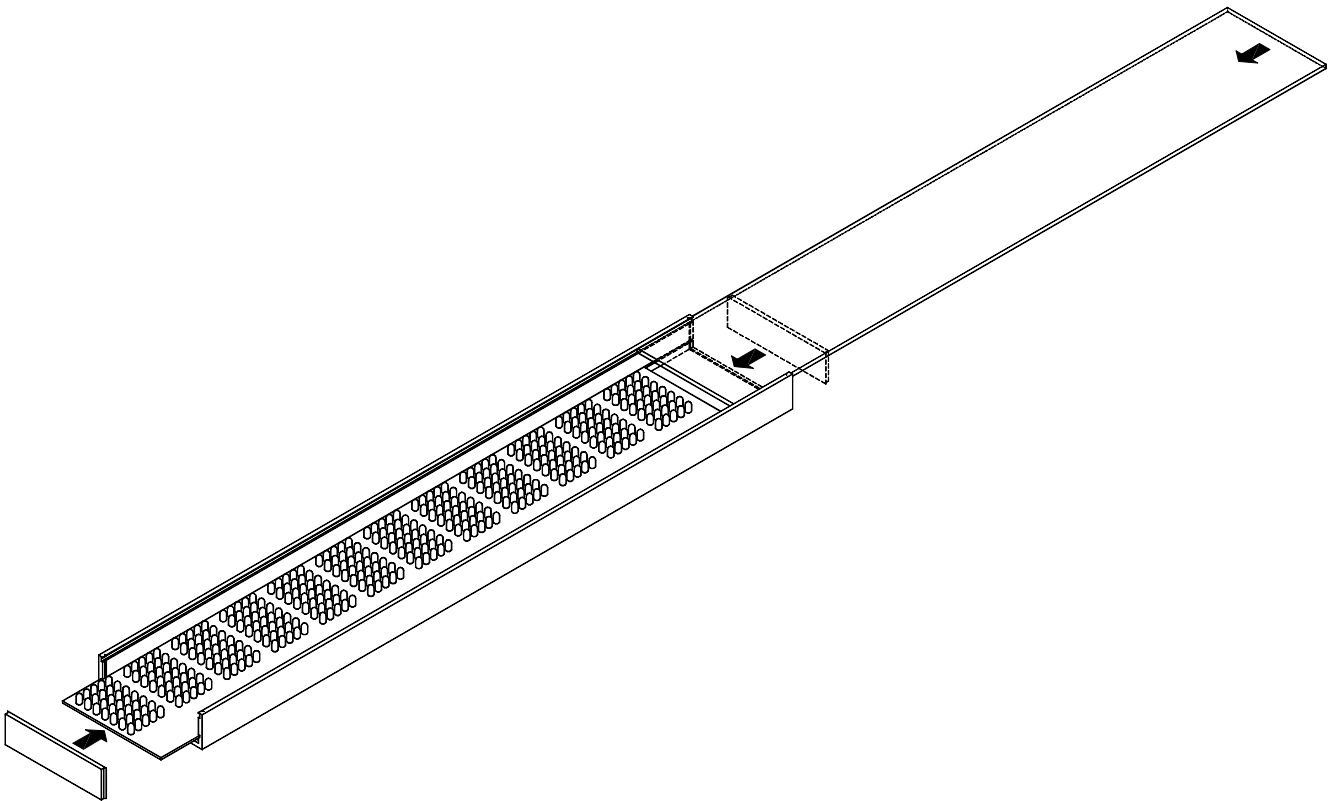


FIG 4

## 14.MOUNTING INTO THE OPTIONAL HOUSING

A special housing can be ordered, type: B5600

- Disassemble the housing by removing the front and side panels.
- Drill a pass through hole into the housing where supply wire is desired (side, back, top, bottom...).
- In a master / slave configuration, drill also a pass through hole into the housing where interconnection wires are needed.
- An extra hole can be made, if easy access to the speed adjustment potentiometer is desired.
- Slide the PCB into the lower slot.
- Slide in the side panels.
- Mount the front panel.



**⚠ IMPORTANT:** If the unit is used with a power supply higher than 15V, then ventilation holes must be made in the bottom and top part of the housing!