

WHADDA K8035 Multifunction Up Down Counter Kit Instruction Manual

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K8035 Multifunction Up Down Counter Kit

Product Information: – Product Name: Advanced UP/DOWN counter – Model Number: K8035 – Total Solder Points: 271 – Difficulty Level: Beginner 1 2 3 4 5 Advanced – Features: Count up or down, count input through on-board push buttons or external pulses, display modes for normal or time (hh:mm and mm:ss), internal oscillator for time measurement, programmable pre-set value with equal output, self diagnostic at power up, comes with easy board to wire connector (20cm wire), useful for people counting, part counting, and score keeping. – Specifications: – Counter Input: 3...12 VDC (normal dry contact also possible) – EQUAL Output: 5VDC / max 50mA – Max. Counting Speed: 200/sec. (2/sec. with long debounce delay) – Max. Count: 4 Digits (9999/23h59m/59m59s) – Power Supply: 9...12 VDC or transformer 2 x 9 VAC type: 209005 – Power Consumption: 150mA max. – Dimensions: 125 x 75 x 18mm (4.9x3x0.7) **Product Usage**

Instructions: 1. Assembly: – Make sure you have the right tools, including a basic multi-meter if required. – Follow the assembly hints provided in the manual carefully. – Mount the components against the PCB surface and solder the leads. – Ensure that the solder joints are cone-shaped and shiny. – Trim excess leads as close as possible to the solder joint. – Remove axial components from the tape one at a time, following the correct mounting sequence. 2. Jumpers J: – There are 10 jumpers labeled J in the assembly. – Install them according to the provided instructions. 3. Diodes: – There are multiple diodes labeled D in the assembly. – Pay attention to the polarity while installing them. 4. Zener Diode: – There is a Zener diode labeled ZD in the assembly. – Watch the polarity while installing it. 5. Resistors: – There are multiple resistors labeled R in the assembly. – Install them according to their values mentioned in the manual. 6. Pushbuttons: – There are pushbuttons labeled SW in the assembly. – Install them according to their corresponding labels. 7. Voltage Regulator: – There is a voltage regulator labeled VR1 in the assembly. – Install it following the provided instructions. – Watch the polarity of the LED (LD1) while installing it. 8. IC Sockets: – There are IC sockets labeled IC and DY in the assembly. – Install them, ensuring the correct position of the notch. 9. Ceramic Capacitors: – There are multiple ceramic capacitors labeled C in the assembly. – Install them according to their values mentioned in

the manual. 10. Transistors: – There are multiple transistors labeled T in the assembly. – Install them according to their corresponding labels. 11. Connector 10p: – Install the 10p connector as instructed. 12. Electrolytic Capacitor: – There is an electrolytic capacitor in the assembly. – Watch the polarity while installing it. Please refer to the complete illustrated assembly manual for detailed step-by-step instructions and diagrams.



Total solder points: 271

Difficulty level: beginner ☐ 2 ☐ 3 ☐ 4 ☒ 5 ☐ advanced

Advanced UP/DOWN counter



K8035

Handy for people counting, part counting, score keeping, ...

ILLUSTRATED ASSEMBLY MANUAL

H8035IP-1

Features & Specifications

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Features:

- ☒ Count up or down.
- ☒ Count input through on-board push buttons or by external pulses.
- ☒ Display modes : Normal or time (hh:mm and mm:ss).
- ☒ An internal oscillator allows time measurement.
- ☒ Programmable pre-set value with equal output.
- ☒ Self diagnostic at power up.
- ☒ Comes with easy board to wire connector (20cm wire).
- ☒ Comes in handy for people counting, part counting, score keeping,

Specifications:

- Counter Input : 3...12 VDC (normal dry contact also possible)
- EQUAL Output : 5VDC / max 50mA
- Max. Counting speed : 200 / sec. (2 / sec. with long debounce delay)
- Max. Count : 4 Digits (9999 / 23h59m / 59m59s)
- Power supply : 9...12 VDC or transformer 2 x 9 VAC type : 209005
- Power consumption : 150mA max.
- Dimensions : 125 x 75 x 18mm (4,9"x3"x0,7")

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Assembly hints

1. Assembly (Skipping this can lead to troubles !)

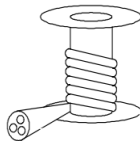
Ok, so we have your attention. These hints will help you to make this project successful. Read them carefully.

1.1 Make sure you have the right tools:

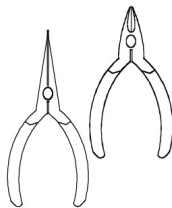
- A good quality soldering iron (25-40W) with a small tip.
- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the



tip, it needs cleaning.

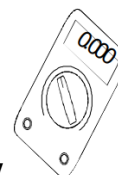


- Thin raisin-core solder. Do not use any flux or grease.
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot



fly towards the eyes.

- Needle nose pliers, for bending leads, or to hold components in place.
- Small blade and Phillips screwdrivers. A basic range is fine.



For some projects, a basic multi-meter is required, or might be handy

1.2 Assembly Hints :

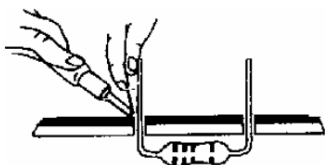
⇒ Make sure the skill level matches your experience, to avoid disappointments.

- ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
- ⇒ Perform the assembly in the correct order as stated in this manual
- ⇒ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
- ⇒ Values on the circuit diagram are subject to changes.
- ⇒ Values in this assembly guide are correct*
- ⇒ Use the check-boxes to mark your progress.
- ⇒ Please read the included information on safety and customer service

* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

1.3 Soldering Hints :

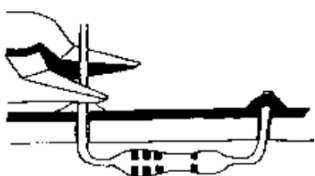
- 1- Mount the component against the PCB surface and carefully solder the leads



- 2- Make sure the solder joints are cone-shaped and shiny

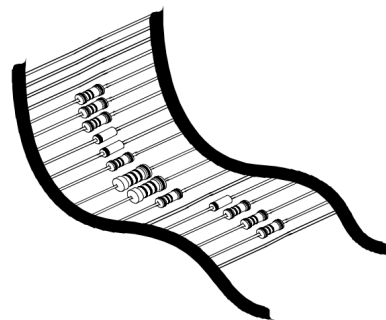


- 3- Trim excess leads as close as possible to the solder joint



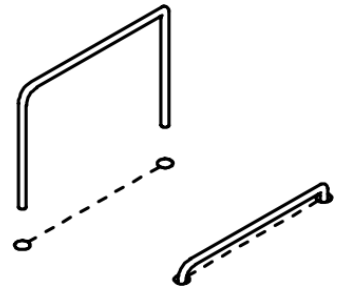
REMOVE THEM FROM THE TAPE ONE AT A TIME !

AXIAL COMPONENTS ARE TAPED IN THE CORRECT MOUNTING SEQUENCE !

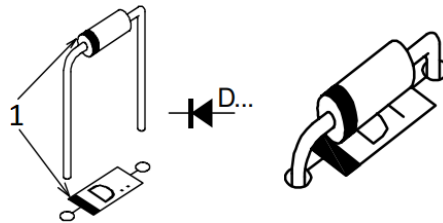


1. Jumpers

☐ J : 10x



2. Diodes. Watch the polarity !



1. CATHODE

☐ D1: **1N4007**

☐ D2: **1N4007**

☐ D3: 1N4148

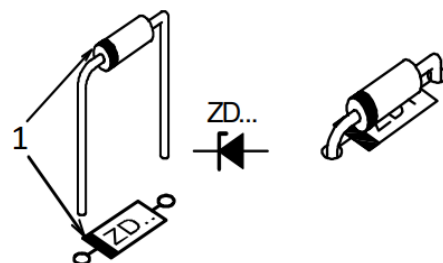
☐ D4: 1N4148

☐ D5: 1N4148

☐ D6: 1N4148

☐ D7: 1N4148

3. Zener diode. Watch the polarity !

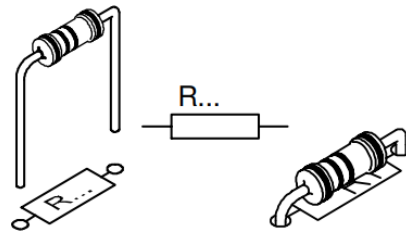


1. CATHODE

☐ ZD1 : 4V7

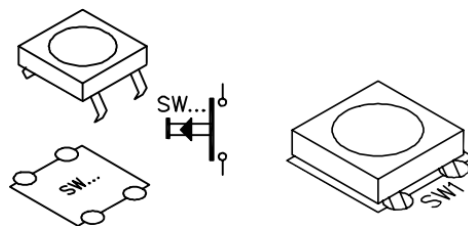
☐ ZD2 : 4V7

4. Resistors



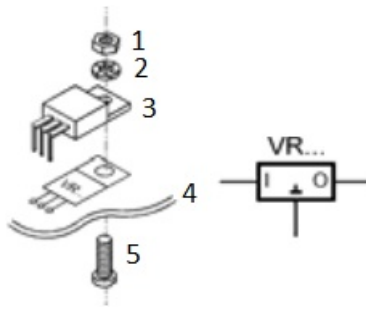
- ☐ R9 : 10K (1-0-3-B)
- ☐ R10 : 10K (1-0-3-B)
- ☐ R11 : 10K (1-0-3-B)
- ☐ R12 : 10K (1-0-3-B)
- ☐ R13 : 10K (1-0-3-B)
- ☐ R14 : 2K2 (2-2-2-B)
- ☐ R15 : 2K2 (2-2-2-B)
- ☐ R16 : 2K2 (2-2-2-B)
- ☐ R17 : 2K2 (2-2-2-B)
- ☐ R18 : 4K7 (4-7-2-B)
- ☐ R19 : 4K7 (4-7-2-B)
- ☐ R20 : 10K (1-0-3-B)
- ☐ R21 : 10K (1-0-3-B)
- ☐ R22 : 10K (1-0-3-B)
- ☐ R23 : 10K (1-0-3-B)
- ☐ R24 : 10K (1-0-3-B)
- ☐ R25 : 10K (1-0-3-B)
- ☐ R26 : 10K (1-0-3-B)
- ☐ R27 : 10K (1-0-3-B)
- ☐ R28 : 390 (3-9-1-B)

5. Pushbuttons.



- ☐ SW1: KRS1243
- ☐ SW2: KRS1243
- ☐ SW3: KRS1243
- ☐ SW4: KRS1243

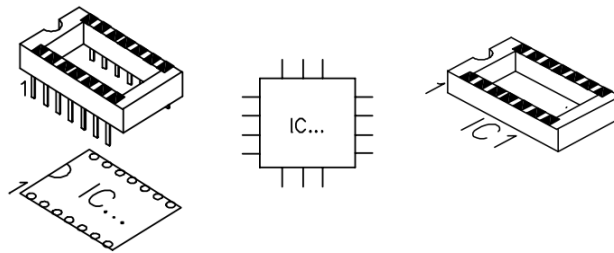
6. Voltage Regulator.



1. M3 NUT
2. M3 LOCK WASHER
3. VOLTAGE REGULATOR
4. PCB
5. M3 BOLT

☐ VR1: UA7805

7. IC sockets. Watch the position of the notch!

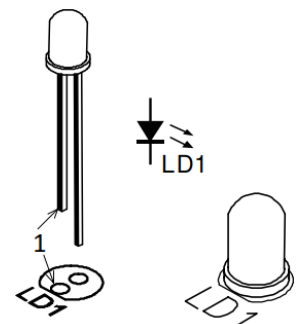


- ☐ IC1 : 28P
- ☐ DY1 : 14P
- ☐ DY2 : 14P
- ☐ DY3 : 14P
- ☐ DY4 : 14P

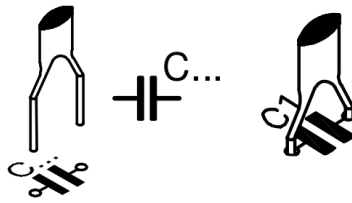
8. LED. Watch the polarity!

☐ LD1 : 3mm Red.

1. CATHODE



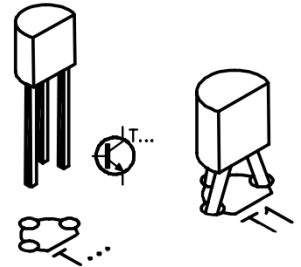
9. Ceramic Capacitors



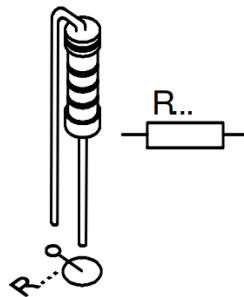
- ☐ C1 : 18pF (18,18J)
- ☐ C2 : 18pF (18,18J)
- ☐ C3 : 100nF (104)
- ☐ C4 : 100nF (104)
- ☐ C5 : 100nF (104)
- ☐ C6 : 1nF (102)
- ☐ C7 : 1nF (102)

10. Transistors.

- ☐ T1 : BC557C
- ☐ T2 : BC557C
- ☐ T3 : BC557C
- ☐ T4 : BC557C
- ☐ T5 : BC557C
- ☐ T6 : **BC547**
- ☐ T7 : **BC547**



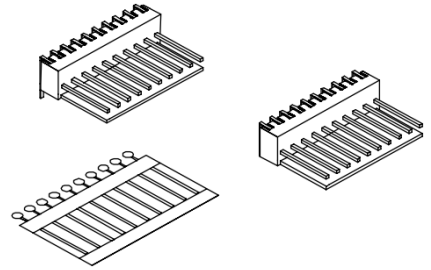
11. Resistors



- ☐ R1 : 150 (1-5-1-B)
- ☐ R2 : 150 (1-5-1-B)
- ☐ R3 : 150 (1-5-1-B)
- ☐ R4 : 150 (1-5-1-B)
- ☐ R5 : 150 (1-5-1-B)
- ☐ R6 : 150 (1-5-1-B)
- ☐ R7 : 150 (1-5-1-B)
- ☐ R8 : 150 (1-5-1-B)

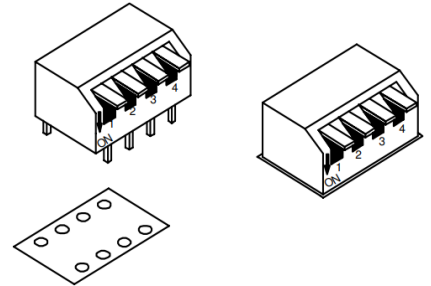
12. Connector

☐ 10p



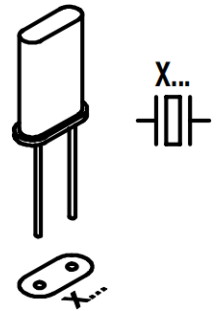
13. DIP Switch

☐ DS – 4



14. Quartz crystal

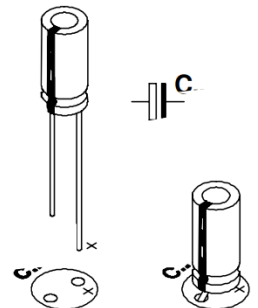
☐ X1: 4,1943... MHz.



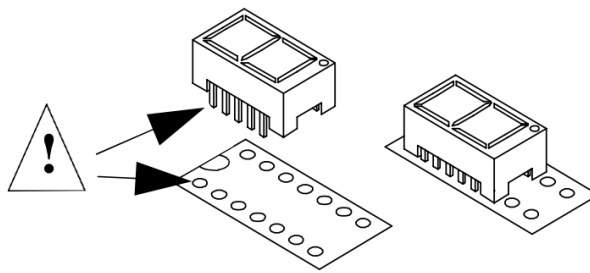
15. Electrolytic capacitor. Watch the polarity !

☐ C8 : 470 μ F

☐ C9 : 10 μ F

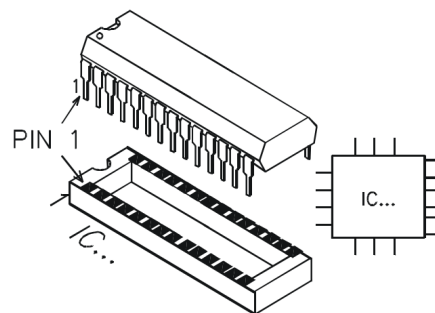


16. Display



SA39-11EWA

17. IC, Check the position of the notch !

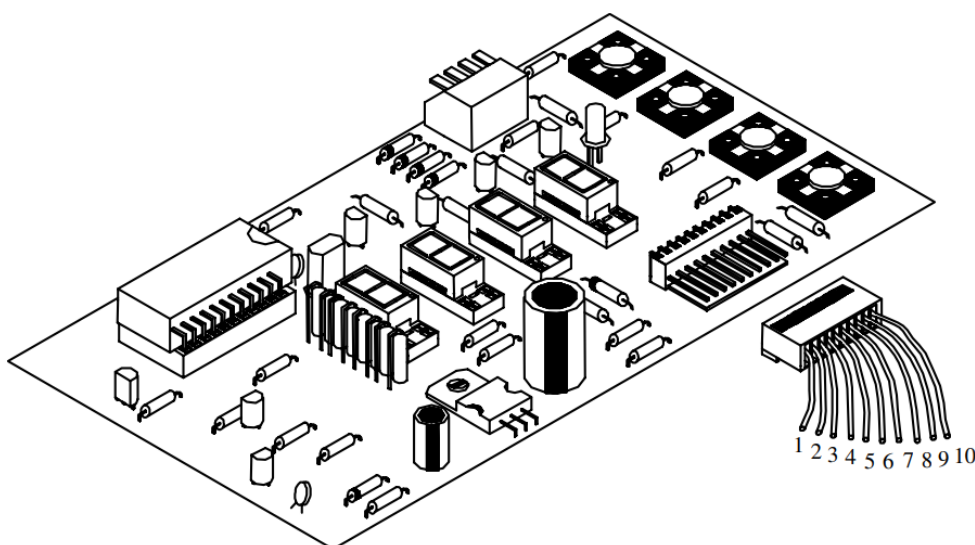



IC1: VK8035 (Programmed PIC16C57)

Connection

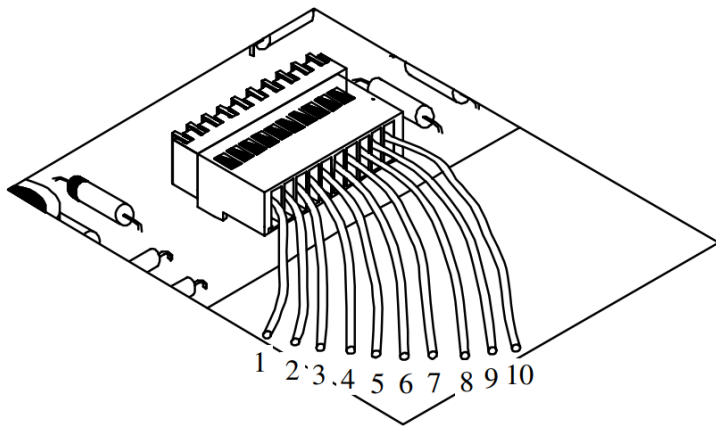
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18. Connection



 The grounds are internally connected.

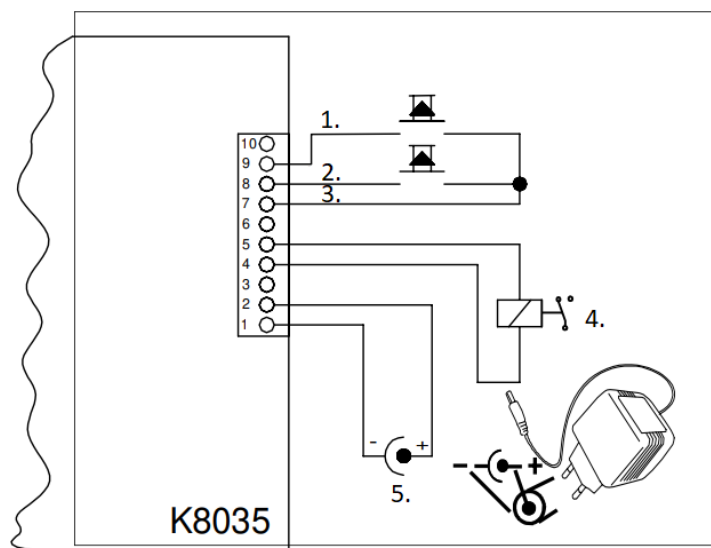
* E.out : 5V / 50mA max. output at "equal" pre-set value



1	GND	6	GND
2	+ VA	7	+ 5V
3	+ VB	8	Count Down input (B)
4	GND	9	Count Up input (A)
5	E. OUT	10	GND

Inspect the complete assembly once more before applying power to the unit !

Hook-up when using an adapter

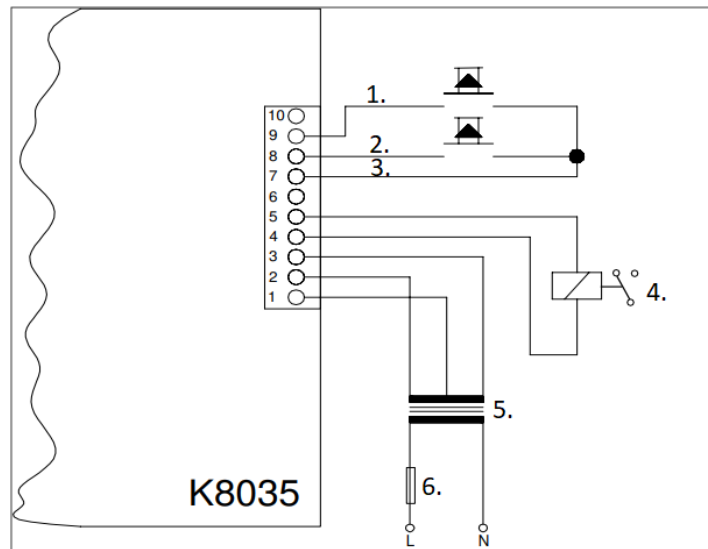


1. Count Up
2. Count Down

- ## 5. ADAPTOR

Fig. 1.0

Hook-up when using a transformer



- 100mA

Fig. 2.0

Operation

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19. Operation

When all connections are made, the four LED displays will light up and the Kit number will appear “8 0 3 5” after which following messages appear :

r x. x x	Version number
T E S T	Self-test is working
G O O D	Internal parts are working correctly

If an irregularity is found during the self-test, an error code will appear, when GOOD appears then the unit is ready for use.

Error code	Description
Err. 2	Error in the keyboard section.
Err. 3	The switches are in the wrong position. 'DIP SWITCH'
Err. 4	Input A and B are at the same time active
Err. 5	Input A is active during self-test or input A is possibly malfunctioning.
Err. 6	Input B is active during self-test or input B is possibly malfunctioning.

The errors 5 & 6 can appears when during the self-test counter pulses are received, this can be reset by pressing SW4 briefly.

Counting pulses can be applied to the unit in two different ways :

1. + 3V to 12V pulses with respect to ground.
2. Use the + 5V connection for push buttons or relay contacts when there is no power supply from an external source.

Press "Reset" button briefly to reset the readout. "0000".

Press the "UP" button to increase the actual value with one.

Press the "DOWN" button to decreases the actual value with one.

Setting the Pre-set value:


It is possible to set a number which will continuously be compared with the content of the counter. If both are equal, then the output (Equal OUT) is activated.

- Press Set/Run (set briefly appears).
- Press Up or Down to set the value.
- Press Set/Run to store the value (Run appears).

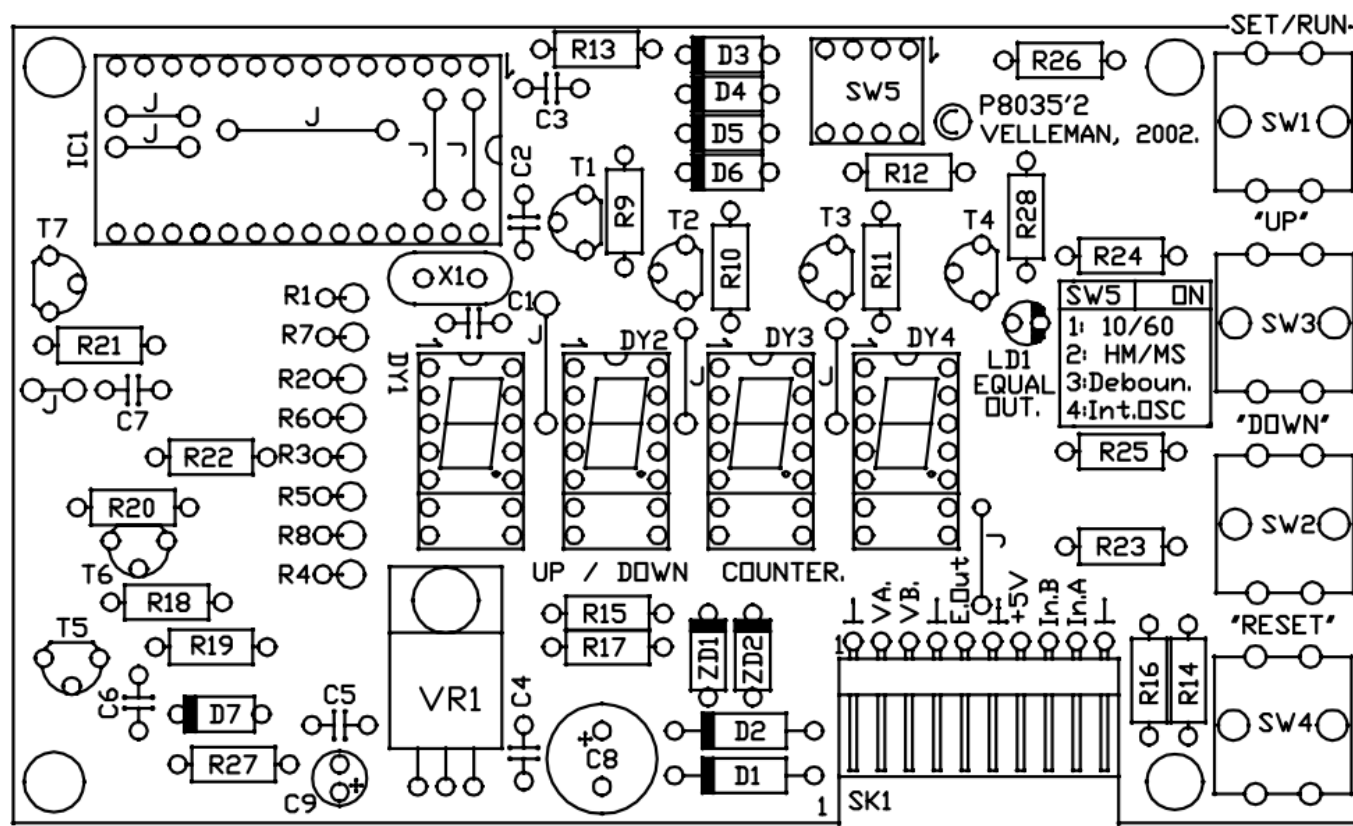
Counter settings :

The counter can be used for decade or modulo 60 (clock) counting, an internal oscillator can be provided for use in modulo 60-mode

1. COUNTER SETTINGS		
FUNCTION	DIP SWITCH	
	OFF	ON
Decade counter	1	
Modulo 60 : hh:mm (23.59)	2	1
Modulo 60 : mm:ss. (59.59)		1 & 2
2. DEBOUNCE SETTING		
Normal debounce	3	
Long debounce		3
3. INPUT SETTING		
External pulses	4	
Internal oscillator		4

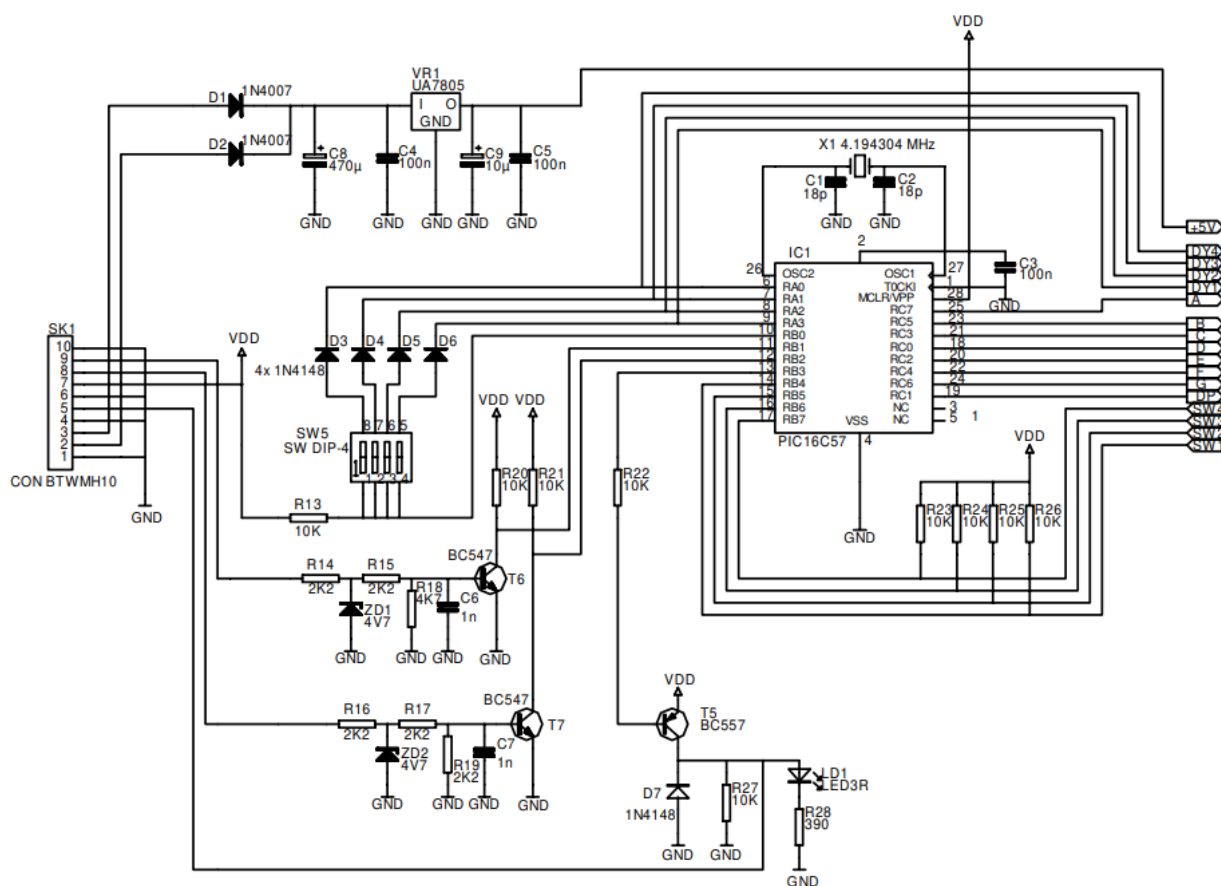
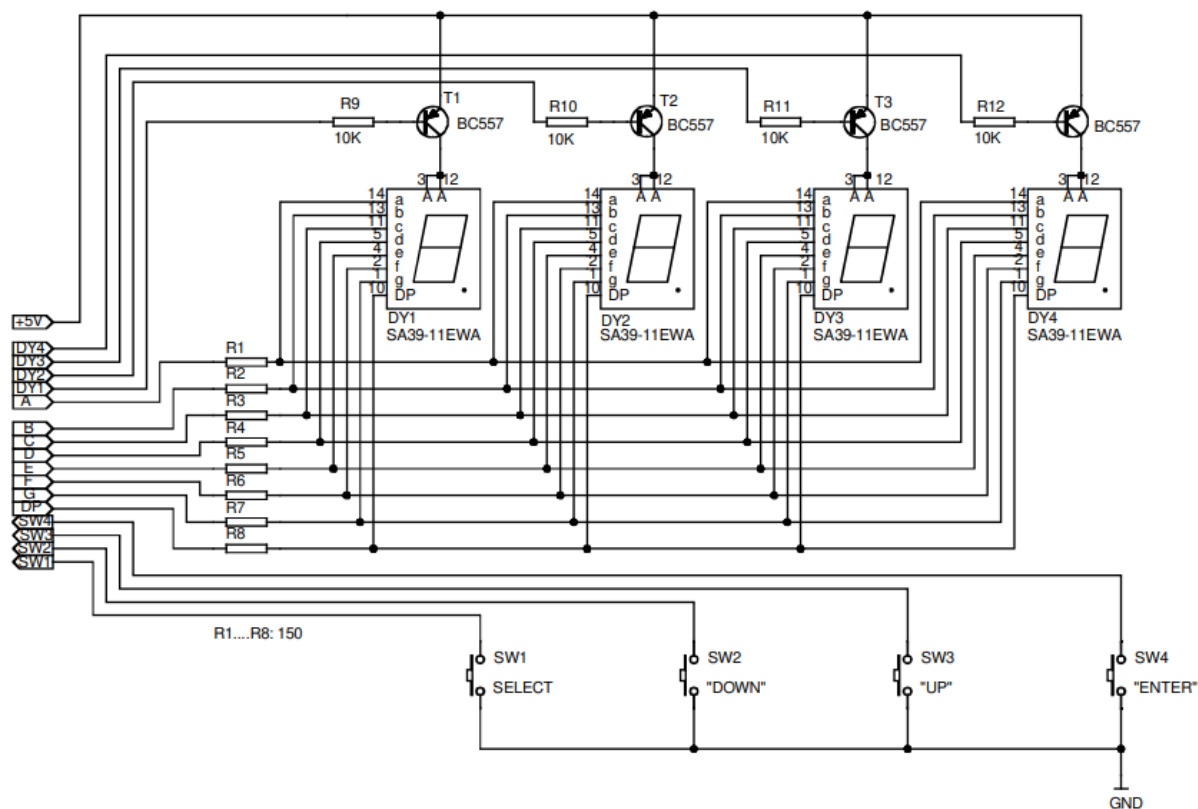
 **ATTENTION :** When changing the position of one of the switches, the current counter value and the pre-set value will be erased. (0000)

20. PCB



Schematic diagram


21. Schematic diagram.



VELLEMAN Components NV
 Legen Heirweg 33
 9890 Gavere
 Belgium Europe
www.velleman.be
www.velleman-kit.com



Documents / Resources

	<p>WHADDA K8035 Multifunction Up Down Counter Kit [pdf] Instruction Manual K8035 Multifunction Up Down Counter Kit, K8035, Multifunction Up Down Counter Kit, Up Down Counter Kit, Down Counter Kit, Counter Kit</p>
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References

-  [Velleman â€œ Wholesaler and developer of electronics](#)