FUTURE KIT
HIGH QUALITY ELECTRONIC KITS

DIGITAL COUNTER 2 DIGIT
CODE 926   LEVEL 1

The digital counter 2 digit device is maximum count to 99 but also can be connected with the other set to increase the count to 9999 and more.

Technical specifications:
- power supply : 6-12VDC.
- consumption : 150mA max. @ 12VDC.
- display : 2 digit (0.56 inch 7-segment LED)
- PCB dimensions : 2.85 x 3.05 inches.

How to works:

IC1 is dual BCD decade up counter. IC2 and IC3 is BCD to the dual digit display. The input signal will transmitted to pin 1 of IC1. The internal circuit of IC1 will be dual decade counter. This signal is fed to 1st decade counter circuit. When the 1st decade counter circuit to count ten point will transmitted the signal to the 2nd decade counter circuit through pin 6 of IC1. After the 2nd decade counter circuit to count ten. At "OUT" point is used to increase the digit. Then it will be transmitted to other point. The pin 7 and pin 15 of IC1 is connected to reset the circuit. SW2 check the counting. The circuit can supply the voltage at 12VDC. TR1 and TR2 work as a buffer.

PCB assembly:

Shown in Figure 3 is the assembled PCB. Starting with the lowest height components first, taking care not to short any tracks or touch the edge connector with solder. Some tracks run under components, and care should be taken not to short out these tracks. If the pins will not enter the holes with ease, use a small drill to slightly enlarge the opening. All components with axial leads should be carefully bent to fit the position on the PCB and then soldered into place. Make sure that the electrolytic capacitors are inserted the correct way around. Some components are particularly sensitive to heat (ie: Transistors, IC's, diodes etc.) extra care must be taken to only apply the iron for as little time as possible, using a pair of pliers to grip the leads will help conduct heat away. Trim components leads with wire cutters to prevent excess lengths causing a short circuit. Now check that you really did mount them all the right way round!
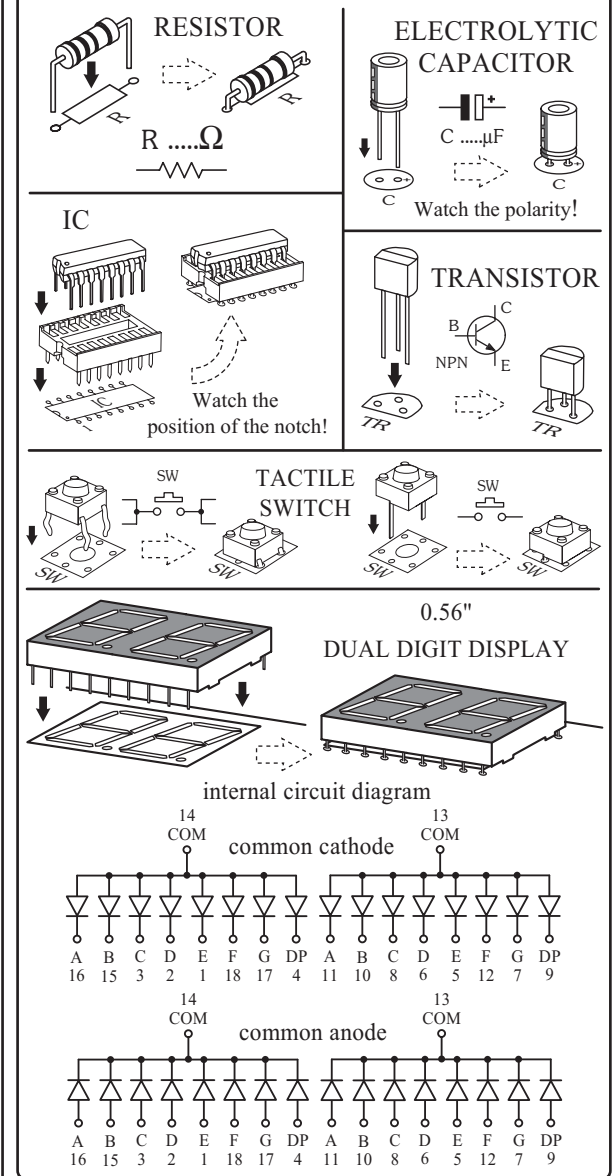
How to check the common of the dual digit disply

Set the analog ohmmeter to a range x10. Connect the position terminal (red) to pin 13 or pin 14 of dual digit display and touch the negative terminal (black) to the rest of pin. Each segment will be light on following touch. That is meaning dual digit display to be common cathode (K). But if each segment is not light on, meaning that dual digit display is common anode (A). When you know the common of dual digit display, jumping the jumper JP to the same the dual digit display.

Testing:

Connect dry cell or an adapter 12VDC by connecting the positive pole to "+12V" point and the negative pole to "-" point. At this stage LED will light as 00. If it show in other form, press the reset switch. Press the test switch. Then the digital will show as 01, 02 ... according to 99 and reverse to 00 again. The signal level at fed to "CLK" point is more than 2-volt.

Figure 1. Installing the componants

RESISTOR

R .....Ω

ELECTROLYTIC CAPACITOR

C .....μF

Watch the polarity!

IC

Watch the position of the notch!

TRANSISTOR

NPN

TR   TR

TACTILE SWITCH

0.56"
DUAL DIGIT DISPLAY

internal circuit diagram

14 COM   13 COM
common cathode

A B C D E F G DP   A B C D E F G DP
16 15 3 2 1 18 17 4   11 10 8 6 5 12 7 9

14 COM   13 COM
common anode

A B C D E F G DP   A B C D E F G DP
16 15 3 2 1 18 17 4   11 10 8 6 5 12 7 9

Troubleshooting:

The most problem like the fault soldering. Check all the soldering joint suspicious. If you discover the short track or the short soldering joint, re-solder at that point and check other the soldering joint. Check the position of all component on the PCB. See that there are no components missing or inserted in the wrong places. Make sure that all the polarised components have been soldered the right way round.

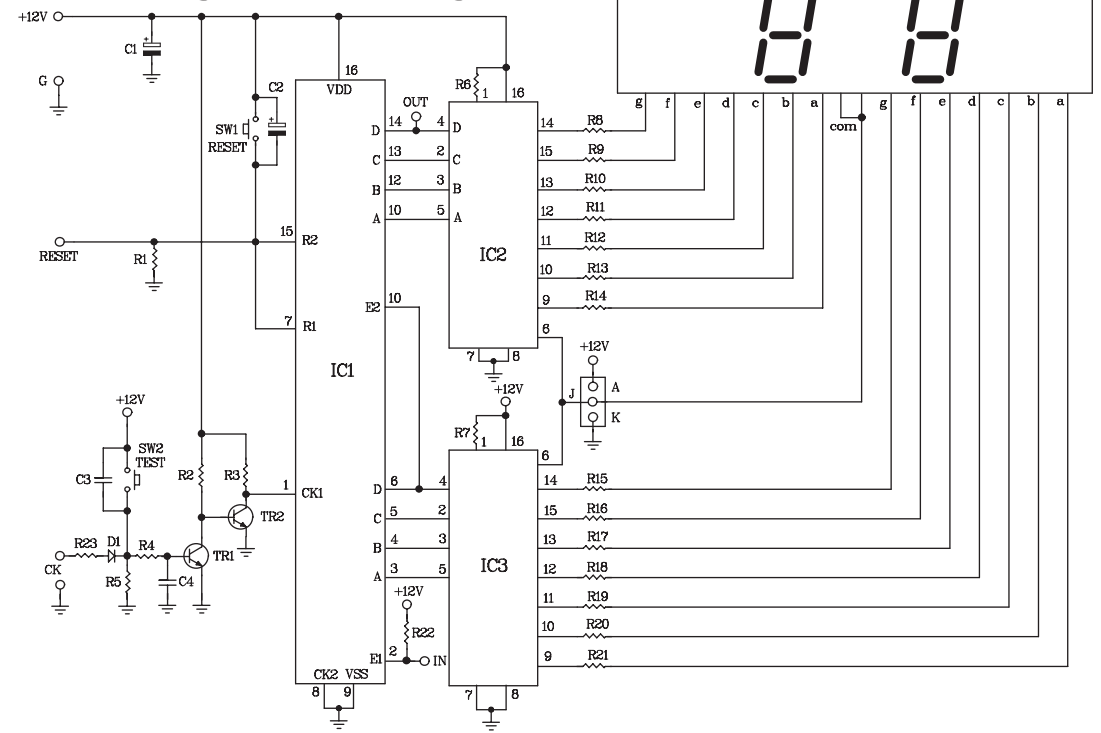---

Figure 2. The digital counter 2 digit circuit

Figure 3. Connections

FK926-2

INPUT SIGNAL

Select jumper

common

anode (A)   cathode (K)

PIN OF DUAL DIGIT DISPLAY   TOP

18
1

+12V
GND

NOTE:
FUTURE BOX FB04 is suitable for this kit.