# Link-232 High Speed RS-232 Serial Interface

The Link-232 Interface, designed by Jim Brain, provides a high-speed serial port for Commodore 8-bit computers.  It can operate at speeds of up to 38400bps, and is compatible with all software that can utilize a Dr. Evil Labs or CMD Swiftlink cartridge.

This is my second batch of interfaces, and I've decided to have solder mask applied to the boards.  This makes soldering them easier, and they look a bit more professional.  Because I doubled the size of the run this time, I was able to keep the prices the same as the last batch.

I'll first explain the jumpers on this board for those of you who purchased one already assembled.

**Jumper JP1** on the board is used to change the I/O address from $DE00 to $DF00.  Short pins 1-2 for $DF00, and pins 2-3 for $DE00.

**Jumper JP2** changes the ACIA interrupt between NMI and IRQ.  Use NMI mode with all Commodore computers in native mode, and IRQ for the C128 in CP/M mode.  Shorts pins 1-2 for IRQ, and pins 2-3 for NMI.

As with all electronics, handle these interfaces with care.  The 6551 UART chip is probably the most sensitive to static discharge.  They are best handled by the edges of the board to reduce the chance of zapping one of the chips with static electricity.

That's about it for using the device, now onto some tips on assembling it yourself!

I'm going to assume you have the proper equipment, and have already honed your soldering skills on other stuff before you've decided to build this.  Normally, when I put these together, I start with the sockets.  They're all the same height, and you can let the board sit on them while soldering.  Next, I solder on the DB9 connector, as a couple of the 1uF capacitors obscure pins 1 and 5 on the DB9.  Then, I tackle the discrete components.  You'll notice the solder pads for the capacitors, resistors and crystal are quite small.  The application of solder mask makes soldering these components much easier now, and you can heat the pad and the lead at the same time.  The resistors should all be installed standing straight up.  The larger pads for the sockets and jumpers are much easier, and you can heat the pad and the lead at the same time while applying the solder.

Before plugging the interface into the computer, you should do a quick check with a multimeter between pins 1 and 2/3 on the edge connector.  Make sure there's not a dead short between those two pins.  If there is, check for solder jumping over the void between the solder pad and the ground plane on the board.  I have found this can happen quite easily, so it's best to check the board before you apply power to it with your Commodore.

MO9D

5 0     9 1

C9  C7  C5  C8   R1  CONN1   C4  C2  C1  C3
                 4.7K
              IC1  4.7K              MAX232   IC2
         MAX232        R2
                    4.7K
                    R3
C10  0.1uF                        C11  0.1uF

IC4
6551

QG1  1              Q1   3.6864MHz

JP2        JP1      C6  0.1uF
1   IRQ  NMI  1             IC3

C12                 DXE0 DXC0 DXA0 DX80 DX60 DX40 DX20 DX00
10uF

Link232 v1.2

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EXP_PORT

A                                              22

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VCC

Z  22          6551                    IC1
Y  21    18  D0      TxD  10           1  C1+    V+  2     C8
X  20    19  D1      RxD  12           3  C1-    V-  6     C9
W  19    20  D2      RTS  9                C2+                4.7K
V  18    21  D3      CTS  8            4  C2+         GND   R1
U  17    22  D4      DTR  11           5  C2-
T  16    23  D5      DSR  17
S  15    24  D6      DCD  16           11 T1IN  T1OUT  14   CONN1-3
R  14    25  D7                        10 T2IN  T2OUT  7    CONN1-7
P  13                RxC               12 R1OUT R1IN   13   CONN1-2
N  12    13  RS0                       9  R2OUT R2IN   8    CONN1-8
M  11    14  RS1     XTAL1  6
L  10                XTAL2  7   Q1         MAX232
K   9    4   RESB            3.6864MHz
J   8    26  IRQB
H   7    28  R/WB                      VCC
F   6    27  PH2                       IC2
E   5    2   CS0                       1  C1+    V+  2     C3
D   4    1   CS1B                      3  C1-    V-  6     C4
C   3                                  4  C2+         GND  R3
B   2    15  VCC                       5  C2-         R2K  4.7K
A   1        GND

IO1  IO2
1
2                                      11 T1IN  T1OUT  14   CONN1-4
3                                      10 T2IN  T2OUT  7    CONN1-6
JP1                                    12 R1OUT R1IN   13   CONN1-1
                                       9  R2OUT R2IN   8    CONN1-5
EXP_PORT
EXP PORT                                   MAX232

                                                           CONN1-9
0.1uF  0.1uF                                               CONN1-5
C11    C10     IC4
                QG1
IRQ  NMI    8   VCC   NC/TS  1
1                                7
2    10uF       4
3    C12        GND   OUT   5
JP2

           16  VCC                     DXE0
0.1uF  IC3P                            DXC0
C6         8   GND                     DXA0
           74LS138N                    DX80
       5  G2B   Y7  7
       4  G2A   Y6  9                  DX60
       6  G1    Y5  10
               Y4  11                  DX40
       3  C     Y3  12
       2  B     Y2  13                 DX20
       1  A     Y1  14
       IC3     Y0  15                  DX00

GND

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Designer: Jim Brain

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