



## Ways to connect to the PicoCount counters

*"Caution! This article is full of buzz words."*

Last edited: 6/22/2017

The PicoCount line of counters communicate to the outside world via a 4 pin circular connector. The communications with the PicoCounts is ASCII serial at 115200 Baud, 8 data bits, 1 stop bit, no parity. Our hardware sports an RS-232 like interface. It can be connected to any normal RS-232 interface, however, our inputs and outputs are at 0 to 3V logic levels. The input is full RS-232 signal tolerant, the output is 0 to 3V which works with nearly all RS-232 standard interfaces.

1. Nearly all recent computers utilize USB ports for serial communications via a variety of USB to serial adapters.
2. Some older computers and specialized interfaces sport RS-232 ports, usually through DB-9 connectors.
3. Some microcontrollers and custom designs have the ASCII serial interfaces available as logic level signals directly compatible with the PicoCount serial levels.
4. Many microcontrollers have the ASCII serial communications only available as logic level signals and they are inverted from the RS-232 standard, so require an inverter circuit to interface with our PicoCount units.

The ubiquitous RS-232 ASCII serial interface represents data High with a +9V (approximate) signal and data Low with a -9V (approximate) signal. In idle with no data being sent, the signal is at -9V (Low).

The ASCII serial on most microcontroller and microcomputer chips is at levels 0 to 5V or 0 to 3V logic, with the ASCII serial idle state being 5V or 3V, which is just the opposite sense of the RS-232 standard, and requires the use of inverters to interface to our PicoCount units.

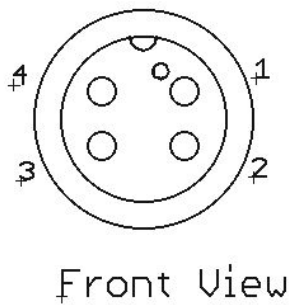
Some board level and boxed microcontroller designs have the serial ASCII signals as 0 to 5V or 0 to 3V logic with the ASCII serial idle state being 0V which is directly compatible with our PicoCount units.

Our PicoCount units require a 0 to 3V logic signal for communications with the ASCII serial idle state at 0V. Our serial input can accept the standard RS-232 signals as inputs with no additional circuitry.

### **RS-232 serial available on DB-9 connector:**

A cable can be prepared to interface to the PicoCount unit directly as such:

NOTE: Cable wire colors may vary with vendors!!!



### Electrical Connections:

| DB-9F | CONXALL | COLORS   |        |
|-------|---------|----------|--------|
| 2     | 2       | BROWN    | RED    |
| 3     | 3       | RED      | ORANGE |
| 5     | 1       | YLW/BARE | GREEN  |
| NC    | 4       |          |        |

### USB to PicoCount serial:

You can interface from the computer's USB port to a PicoCount with a standard USB to serial converter and the cable detailed above.

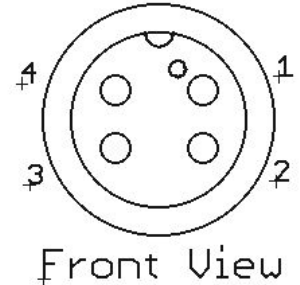
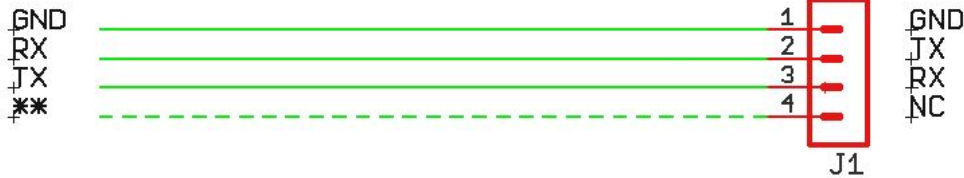
Or

You can interface from the computer's USB port to a PicoCount with our download cable (VC-DC-USB). Our cable consists of a standard USB type A to USB type B cable which plugs into a custom USB to PicoCount adapter.

## Your microcontroller to PicoCount serial:

If you are technically inclined, you can brew your own cable with a Conxall connector to connect to our PicoCount unit and your own cable and terminations. Note, if the ASCII serial (often referred to as the UART) interface is logic level, you do need to determine if the idle condition (no characters being sent) is logic high (most common) or logic low. If the idle signal is logic low, no extra circuitry is required.

Your Connector or pad connections. CONXALL 4 PIN FEM

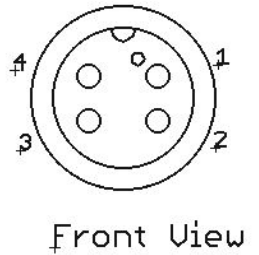
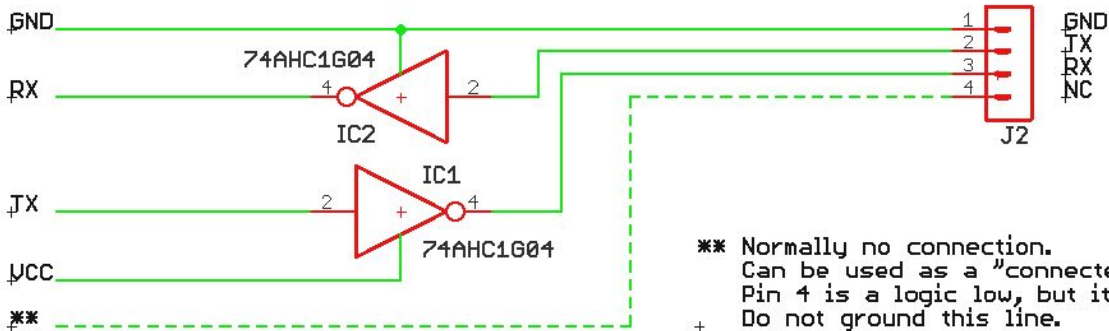


\*\* Normally no connection.  
 Can be used as a "connected" sense line.  
 Pin 4 is a logic low, but it is NOT ground.  
 + Do not ground this line.

If the idle is at logic high, then you will need to add a couple of inverters to the cable.

Your Connector or pad connections.

CONXALL 4 PIN FEM



\*\* Normally no connection.  
 Can be used as a "connected" sense line.  
 Pin 4 is a logic low, but it is NOT ground.  
 + Do not ground this line.

Conxall connector part number: 6282-4SG-3DC

You may purchase this part from [www.digikey.com](http://www.digikey.com) (part number SC1267-ND)

Or from [www.mouser.com](http://www.mouser.com) (part number 502-6282-4SG-3DC).

Or from [www.amazon.com](http://www.amazon.com) (part number 6282-4SG-3DC)