USB-TTL-5 PRODUCT IS A COMBINATION OF PRODUCTS USB-232-2 AND TTL-232-5P BOTH DATASHEETS ARE INCLUDED IN THIS PDF FILE
USB-232-2
USB 2.0 To RS-232 Converter – DB9
Datasheet Revision 2.5

GENERAL FEATURES:
- Plug-and-Play (hot-pluggable)
- USB 1.1 and 2.0 compatible
- Port powered - no external power needed
- Supports 300 baud to 460,800 baud rates
- Supports all RS-232C signals: TX, RX, RTS, CTS, DTR, DSR, RI and GND
- 3 feet (1m) cable for convenience
- Transmit/Receive LED indicators
- Data direction auto-turnaround - no flow control necessary
- Internal 128/385 byte TX / RX buffers
- No IRQs, IO, DMA required. No IRQ conflicts
- Supports remote wakeup and power management
- Easy to install included drivers
- Built-in surge and static protection
- 5 Year manufacturer’s warranty
- RoHS, CE, and FCC certified

DESCRIPTION:
The SerialComm USB-232-2 is a bi-directional USB-powered USB to RS-232 converter which makes a full-duplex RS-232C port available to a PC via the USB port. The USB-232-2 has a db-9 male connector on the RS-232C serial port, and a USB type A female on the USB port. The adapter is powered from the USB port; no external power is required.

The USB-232-2 uses the latest FTDI chipset and is fully compatible with Windows 10 32/64, Windows 8 32/64, Windows 7 32/64, Vista 32/64, Server 2003, Server 2008, Server 2008 R2, XP 32/64, 2000, 98Se, CE, Mac 8/9/X, Linux and Android.

CERTIFICATIONS:
- CE, FCC and RoHS Conformance Certified
- Manufactured and Distributed to ISO 9001:2008
- Low Failure Rate – 99+% Reliability Since Inception
- 5 Year Replacement Warranty

PINOUT CONFIGURATION:
RS-232 SIDE – DB9 MALE

<table>
<thead>
<tr>
<th>SIGNAL</th>
<th>DCD</th>
<th>DTR</th>
<th>DSR</th>
<th>RTS</th>
<th>CTS</th>
<th>TX</th>
<th>RX</th>
<th>GND</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN #</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>5</td>
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SPECIFICATIONS:

<table>
<thead>
<tr>
<th>COMMUNICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDARDS: USB 2.0 and 1.1 Standards - EIA/TIA RS-232C Standard</td>
</tr>
<tr>
<td>BAUD RATES: From 300 bps to 460,800 bps</td>
</tr>
<tr>
<td>CONNECTOR TYPES: USB Side: Type A Female and RS-232 Side: DB9 Male</td>
</tr>
<tr>
<td>DISTANCE: USB Side: 10ft (3m) and RS-232 Side: 16 ft (5m)</td>
</tr>
<tr>
<td>LED INDICATIONS: RS-232 TX (Red) and RX (Green)</td>
</tr>
<tr>
<td>DRIVERS: FTDI drivers are included in package</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER SOURCE: Port Powered From USB Port</td>
</tr>
<tr>
<td>CURRENT CONSUMPTION: Less Than 100 mA</td>
</tr>
<tr>
<td>STATIC PROTECTION: 15KV Electric Static Discharge (ESD) Protection</td>
</tr>
<tr>
<td>SURGE PROTECTION: 600W Surge Protection</td>
</tr>
<tr>
<td>CONVERSION IC: FTDI FT232RL</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>MECHANICAL</th>
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</thead>
<tbody>
<tr>
<td>WEIGHT: 2.0oz (58 grams)</td>
</tr>
<tr>
<td>DIMENSIONS: RS-232 Housing: 2.33” X 1.42” X 0.58” (59.3 mm X 36.1 mm X 14.7 mm)</td>
</tr>
<tr>
<td>Cable Length: 3 ft (1m)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING TEMP.: 14° F to 140° F (-10°C to 60° C)</td>
</tr>
<tr>
<td>STORAGE TEMP.: -40° F to 185° F (-40°C to 85° C)</td>
</tr>
<tr>
<td>OPERATING HUMIDITY: 5% To 95% - No Condensation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT SAFETY: CE, FCC and RoHS Conformance Certified</td>
</tr>
<tr>
<td>QUALITY MANAGEMENT: Manufactured and Distributed to ISO 9001:2008</td>
</tr>
<tr>
<td>RELIABILITY: Low Failure Rate – 99+% Reliability Since Inception</td>
</tr>
<tr>
<td>WARRANTY: 5 Year Replacement Warranty</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING INSTRUCTIONS:

Using one USB-232-2 unit:

1. Perform a loop back test on one unit:
   a) Connect the TX to RX on the RS232 port.
   b) Connect the USB connector on the cable to the USB port of the computer.
   c) Install the USB / RS232 FTDI driver on the computer per instructions provided.
   d) Running a hyper terminal program on the PC, send ASCII characters to the USB-232-
      2 converter from one PC port, and check that the characters are received at the same
      PC port. This tests that the transmit and receive functions of the USB-232-2 unit is
      working properly.
   e) When there is constant RX data you should see the GREEN light blink. When there
      is constant TX data you should see the RED light blink.

Using two USB-232-2 units:

1. Perform a loop back test on two units:
   a) Connect the two TX to RX and RX to TX on two USB-232-2 RS-232 ports. Or
      connect TX to TX and RX to RX with a null modem.
   b) Connect the USB connectors on the cables to two USB ports on the computer.
   c) Install the USB / RS232 FTDI driver on the computer per instructions provided.
   d) Running hyper terminal programs on both PCs, send ASCII characters to the USB-
      232-2 converter from one PC port, and check that the characters are received at the
      2nd PC port. Repeat the test in the opposite direction. This tests that the transmit and
      receive functions of both USB-232-2 units are working properly.
   e) The GREEN light should flash when there is RX data and RED when there is TX data.
GENERAL FEATURES:
- Plug-and-Play (hot-pluggable)
- Port powered - no external power needed
- Data direction auto-turnaround - no flow control necessary
- Built-in surge and static protection
- 5 year manufacturer’s warranty
- RoHS, CE, and FCC certified

DESCRIPTION:
The SerialComm TTL-232-5P is a bi-directional port powered RS-232 to 5V TTL converter which converts a full-duplex RS-232C port to a 5V TTL signal. A built-in data direction auto-turnaround feature automatically enables the TTL driver when data is present from the RS-232 port, eliminating the need for software drivers, and making the device fully plug-and-play. The TTL-232-5P has a db-9 female connector on the RS-232 serial port, and db-9 male connector on the TTL port. A separate terminal block is included with the product. The terminal blocks plugs into the TTL port, providing screw-lug wire terminations for the port. The unit is enclosed in a rugged ABS housing, and is powered from the RS-232 data lines; no external power is required.

CERTIFICATIONS:
- CE
- FCC
- RoHS

TTL VOLTAGE LEVELS:

<table>
<thead>
<tr>
<th>TTL INPUT</th>
<th>TTL OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH (&gt; 2.0V)</td>
<td>HIGH (5.0V)</td>
</tr>
<tr>
<td>LOW (&lt; 0.8V)</td>
<td>LOW (0.0V)</td>
</tr>
</tbody>
</table>

SPECIFICATIONS:

COMMUNICATION

STANDARDS: EIA/TIA RS-232C Standard
BAUD RATES: From 300 bps to 115,200 bps
CONNECTOR TYPES: RS-232 Side: DB9 Female and TTL Side: either DB9 Male or 5 Way Terminal Block
DISTANCE: RS-232 Side: 16 ft (5m) and TTL Side: up to 10 ft (3m)

ELECTRICAL

POWER SOURCE: Port Powered From RS-232 Data Lines
CURRENT CONSUMPTION: Less Than 10 mA
STATIC PROTECTION: 15KV Electric Static Discharge (ESD) Protection
SURGE PROTECTION: 600W Surge Protection

MECHANICAL

HOUSING: Rugged ABS
WEIGHT: With Terminal Block: 1.2oz (36 grams) Without Terminal Block: 0.8oz (24 grams)
DIMENSIONS: With Terminal Block: 3.16” X 1.32” X 0.73” (80.3 mm X 33.4 mm X 18.6 mm) Without Terminal Block: 2.47” X 1.33” X 0.70” (62.8 mm X 33.8 mm X 17.8 mm)

ENVIRONMENTAL

OPERATING TEMP: -4°F to 140°F (-20°C to 60°C)
STORAGE TEMP: -40°F to 185°F (-40°C to 85°C)
OPERATING HUMIDITY: 5% To 95% - No Condensation

QUALITY

PRODUCT SAFETY: CE, FCC and RoHS Conformance Certified
QUALITY MANAGEMENT: Manufactured and Distributed to ISO 9001:2008
RELIABILITY: Low Failure Rate – 99+% Reliability Since Inception
WARRANTY: 5 Year Replacement Warranty
TROUBLESHOOTING INSTRUCTIONS:

Using one TTL-232-5P unit:
1. Check that all connections comply with the connection diagrams.
2. Perform a loop back test on one unit:
   a) Connect the TTL IN to TTL OUT on the TTL port.
   b) Connect the RS-232C port to the PC RS-232 port.
   c) Running a hyper terminal program on the PC, send ASCII characters to the TTL-232-5P converter from one PC port, and check that the characters are received at the same PC port. This tests that the transmit and receive functions of the TTL-232-5P unit is working properly.

Using two TTL-232-5P units:
1. Check that all connections comply with the connection diagrams.
2. Perform a loop back test on two units:
   a) Connect the two TTL ports. Connect TTL IN to TTL OUT and TTL OUT to TTL IN.
   b) Connect the two RS-232 ports to two PC RS-232 ports.
   c) Running hyper terminal programs on both PCs, send ASCII characters to the TTL-232-5P converter from one PC port, and check that the characters are received at the 2nd PC port. Repeat the test in the opposite direction. This tests that the transmit and receive functions of both TTL-232-5P units are working properly.

APPLICATIONS:

![Diagram of TTL-232-5P and RS-232 connection](image)

**FIGURE 1: CONNECTING THE RS-232 PORT TO A 5V TTL DEVICE**