

# RS-485 CONVERTER

**101-0009**

*RS-232 to 2-Wire RS-485 Converter*

## ***Installation Operation & Specifications Manual***

- Auto transmit control eliminates RTS requirement
- Power Up/Down glitch-free permits live insertion or removal
- Powered from RS-232 port
- Common mode range permits +/-7V ground difference
- Not bus terminated - increases flexibility

### ***General Description***

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The 101-0009 RS-232 to RS-485 Converter provides a simple, low cost interface between a PC or laptop with an RS-232 serial port, and 2-wire RS-485 devices. Several features of this converter make it simple to use while providing maximum compatibility. RS-232 control lines are looped back. Power for the converter is taken from the serial port lines - no external power supply is needed. In some cases, only transmit, receive, and ground are required. Power is also taken from DTR (data terminal ready) if provided. Switching between receive and transmit is automatically controlled. RTS (request to send) is not used to control transmit.

A rugged design makes 101-0009 an ideal choice for field engineers and technicians who service RS-485 2-wire equipment in an industrial environment. Because the 101-0009 RS-485 converter is used on devices without a ground terminal, voltage suppression is used to clamp the common mode voltage to +/- 7 volts to help prevent destruction of the converter.

For an RS-485 converter with a USB interface Microflex offers the 101-0020.



## ***Software Setup***

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Make sure your software is set to use the same serial COM port that the RS-485 is configured to. There are no hardware settings required by the RS-485 Converter. Power is provided by the RS-232 serial port. All other settings, such as BAUD rate, are taken care of by your software. The converter automatically switches between transmit and receive so RTS is not required.

## ***Getting Power from the RS-232 Port***

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Power for the converter is taken from the RS-232 control lines. There are three possible power sources, RTS, DTR, and TX. RTS and DTR provide power when they are at a positive potential, or active, while TX can provide power in either polarity. The amount of power that the converter needs depends on the RS-485 termination resistors and the number of devices on the bus. Additionally, higher BAUD rates may require additional power. If your application requires increased power, you may need to provide a high or active DTR while the converter is in use. Additional power can be added by driving both RTS and DTR active while the converter is in use.

## ***Connecting to the RS-485 Device***

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Connect the two mini-clips to the RS-485 bus. Following the RS-485 standards, the black clip is the A connection and the red clip is the B connection.

- BLACK = A RS-485 Connection
- RED = B RS-485 Connection

## ***Converter Grounding***


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The 101-0009 converter does not provide an RS-485 ground terminal. Unless the other device's interface is isolated, there is a risk of a ground loop current that could result in equipment damage. The converter should only be used where the common mode voltage (ground potential difference between the two interfaces) is within the standard RS-485 common mode voltage of +/- 7 volts.


## ***Safety Considerations***


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**FC** Conformity in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Rules and Regulations, and ICES-003 of the Industry Canada standards.


 This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by Microflex could void the user's authority to operate this equipment.

 Emissions EN55022: 1998  
 Electrostatic Discharge EN61000-4-2: 1995, A1: 1998, A2: 2001  
 Radiated Immunity EN 61000-4-3: 2002  
 Safety Compliance EN 60950-1: 2002

 This device does not have protection from over-voltages which may exist on RS-232 ports of computers and relies on the protection existing in a host computer.

 This device is not intended for connection to the phone line through the appropriate converters and shall not be connected to telecommunication lines because it has no protection against over-voltages which may exist in these lines.

 The user shall ensure the protection of the operator from access to areas with hazardous voltages or hazardous energy in their equipment.

 The user shall ensure that the connection port of the field device and the modem is separated at least by basic insulation from any primary circuit existing in the field device.

## **Specifications**

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### **Enclosure**

Molded Buna-N 90 Durometer Rubber with  
 Stainless Steel Cover  
 Weight ..... 5 ounces  
 Converter Dimensions ..... 1.75" x 2.375" x 0.5"

### **RS-232**

Connector ..... 9-Pin Female D-Shell  
 Cable Length ..... 6 feet  
*(Can be extended up to 25 feet)*

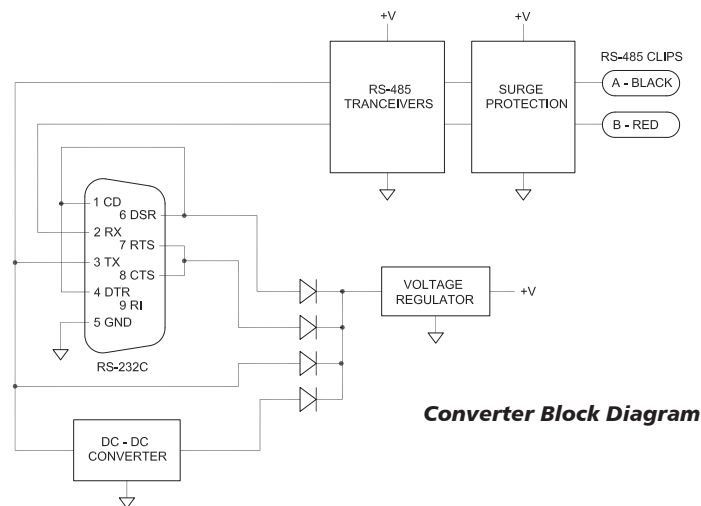
### **RS-485**

Termination ..... Pamona Electronics Mini-Clips  
 A = Black Clip  
 B = Red Clip  
 Leads ..... 1 Foot High Flexibility Test Lead Wire  
 Max BAUD Rate ..... 115,200 BPS\*  
 Driver Output Voltage ..... Unloaded 5V  
 @ 27Ω Load 1.5V Min  
 Δ Input Threshold Receive Voltage ..... +/- 0.2V  
 Receiver Input Hysteresis ..... 45 mV Typ.  
 Receiver Input Current ..... +/- 1mA Max  
 Surge Protection ..... 600W Silicone Avalanche Diodes

### **Environmental**

Operating Temperature ..... -20°C to 50°C (-4°F to 122°F)  
 Storage Temperature ..... -40°C to 85°C (-40°F to 185°F)  
 Humidity ..... 0 to 99% (non-condensing)

\*Max BAUD rate may be limited by available power supplied by RS-232 port, and bus termination.



## Limited Warranty

Microflex, LLC warrants this unit against defects in materials and workmanship for a period of one year from the date of shipment. Microflex, LLC will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

A Return Materials Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before equipment will be accepted for warranty work.

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