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## TTL-232-33IE Industrial RS-232 To 3.3V TTL Converter With Optional External 5V Power

Datasheet Revision 2.5



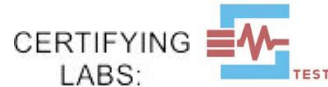
### GENERAL FEATURES:

- Plug-and-Play (hot-pluggable)
- Port powered - no external power needed
- Optional 5V external power can be applied
- Rugged industrial grade design
- Data direction auto-turnaround - no flow control necessary
- Built-in surge and static protection
- 5-year replacement manufacturer's warranty
- CE, FCC, RoHS and REACH certified

### DESCRIPTION:

The SerialComm TTL-232-33IE is an industrial grade bi-directional port powered or external powered RS-232 to 3.3V TTL converter which converts a full-duplex RS-232 port to a 3.3V 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-232-33IE has a DB9 female connector on the RS-232 serial port, and DB9 male connector on the TTL port. A separate terminal block is included with the product. The terminal block 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 or optional 5V external power input.

### CERTIFICATIONS:



### TTL VOLTAGE LEVELS:

TTL INPUT	TTL OUTPUT
HIGH (> 2.0V)	HIGH (3.3V)
LOW (< 0.8V)	LOW (0.0V)

### PORT POWERED WITH OPTIONAL EXTERNAL POWER:

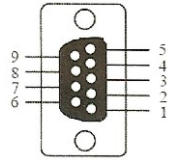
The SerialComm TTL-232-33IE has an optional 5V DC external power input. The TTL-232-33IE is normally port-powered from the RS-232 data lines while using a capacitor charge pump built into the converter to provide necessary power. There are rare instances where the RS-232 host device is not capable of port-powering the converter due to signal incompatibilities or low voltage levels. If this should occur, all that is necessary is adding a 5V DC external power to the terminal block or DB9 connector. Because the TTL-232-33IE is industrial grade and port-powered with an optional 5V power input it makes this converter one of the most versatile RS-232 to 3.3V TTL converters on the market.

### PINOUT CONFIGURATION:

#### RS-232 SIDE – DB9 FEMALE

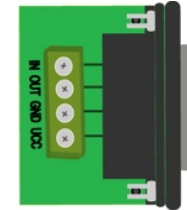
SIGNAL	TX	RX	GND
PIN #	2	3	5
FUNCTION	TX	RX	GND

#### FEM. DB9

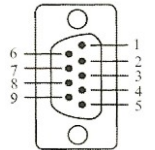


#### 3.3V TTL SIDE – DB9 MALE OR TERMINAL BLOCK

SIGNAL	IN	OUT	GND	VCC
PIN #	1	2	5	6
FUNCTION	TTL IN	TTL OUT	GND	5V OPT.



#### MALE DB9



### SPECIFICATIONS:

COMMUNICATION	
<b>STANDARDS:</b>	EIA/TIA RS-232C Standard
<b>BAUD RATES:</b>	From 300 bps to 115,200 bps
<b>CONNECTOR TYPES:</b>	RS-232 Side: DB9 Female and TTL Side: either DB9 Male or 4-way Terminal Block
<b>DISTANCE:</b>	RS-232 Side: 16 ft (5m) and TTL Side: up to 10 ft (3m)
ELECTRICAL	
<b>POWER SOURCE:</b>	Port Powered From RS-232 Data Lines - Optional 5V External Power
<b>CURRENT CONSUMPTION:</b>	Less Than 10 mA
<b>STATIC PROTECTION:</b>	15KV Electric Static Discharge (ESD) Protection
<b>SURGE PROTECTION:</b>	600W Surge Protection
MECHANICAL	
<b>HOUSING:</b>	Rugged ABS
<b>WEIGHT:</b>	<b>With Terminal Block:</b> 1.2oz (36 grams) <b>Without Terminal Block:</b> 0.8oz (24 grams)
<b>DIMENSIONS:</b>	<b>With Terminal Block:</b> 3.53" X 1.33" X 0.70" (89.6 mm X 33.8 mm X 17.8 mm) <b>Without Terminal Block:</b> 2.47" X 1.33" X 0.70" (62.8 mm X 33.8 mm X 17.8 mm)
ENVIRONMENTAL	
<b>OPERATING TEMP:</b>	-40° F to 185° F (-40°C to 85° C)
<b>STORAGE TEMP:</b>	-40° F to 185° F (-40°C to 85° C)
<b>OPERATING HUMIDITY:</b>	5% To 95% - No Condensation
QUALITY	
<b>PRODUCT SAFETY:</b>	CE, FCC, RoHS and REACH Third-party Certified
<b>QUALITY MANAGEMENT</b>	Manufactured and Distributed to ISO 9001:2015 QMS
<b>RELIABILITY:</b>	Low Failure Rate – 99+% Reliability Since Inception
<b>WARRANTY:</b>	5 Year Replacement Warranty

## TROUBLESHOOTING INSTRUCTIONS:

Using one TTL-232-33IE unit:

1. Check that all connections comply with the connection diagrams.
2. Perform a loop back test on one unit:
  - a) Connect the IN to 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-232-33IE 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-232-33IE unit is working properly.

Using two TTL-232-33IE 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 IN to OUT and OUT to 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-232-33IE converter from one PC port, and check that the characters are received at the 2<sup>nd</sup> PC port. Repeat the test in the opposite direction. This tests that the transmit and receive functions of both TTL-232-33IE units are working properly.

## APPLICATIONS:

### PORT POWER MODE:

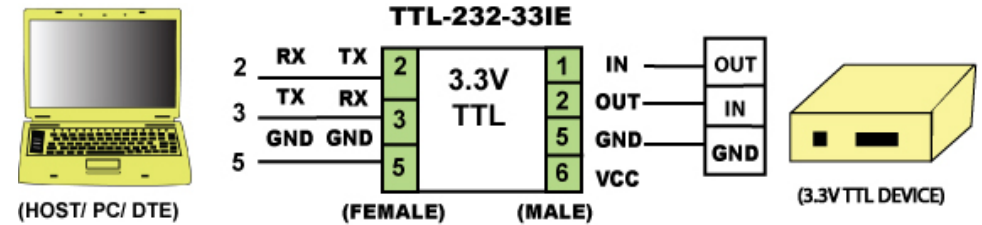


FIGURE 1: CONNECTING RS-232 TO A 3.3V TTL DEVICE - PORT POWER MODE

### 5V EXTERNAL POWER MODE:

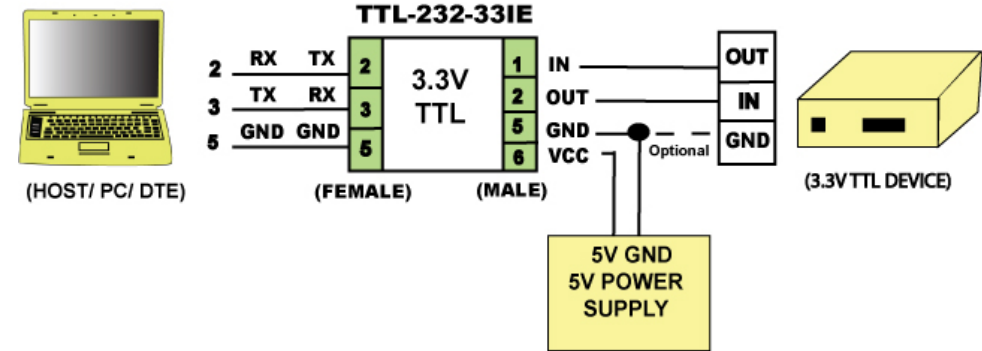


FIGURE 2: CONNECTING RS-232 TO A 3.3V TTL DEVICE - 5V POWER MODE