RS-485/TTL Converter

Model: TTL-485-2

CommFront®
Communications made easy

INTRODUCTION

The TTL-485-2 is a RS-485 to TTL converter, which can be used to convert RS-485 to 5VDC TTL-compatible levels and vice versa. The unit is powered from an external 5VDC power supply. It supports data direction auto-turnaround, and therefore, no flow control is required.

FEATURES

- Plug and play (Hot-pluggable, Data format Auto-sensing & Self-adjusting).
- Data direction auto-turnaround, no flow control is required.
- SMT technology.
- Built-in Terminating Resistor (120Ω).
- Built-in Static protection circuit (ESD).
- Built-in Short Circuit protection (RS-485 and TTL data line).

SPECIFICATIONS

Compatibility:	EIA/TIA RS-485 standard and TTL level
Power Source:	+5VDC (±5%) Regulated Power Supply (not included)
Current Consumption:	Under 30mA
Baud Rates:	300 to 115,200bps (Auto-sensing & Self-adjusting)
Distance:	RS-485 side: Up to 1.2km (4000ft) at 19,200bps; TTL side: 3m (10ft)
Connectors:	TTL Side: DB-9 Male; RS-485 Side: DB-9 Male; Termination Board (TTL): DB-9 Female and a 3-way Terminal Block; Termination Board (RS-485): DB-9 Female and a 4-Way Terminal Block
Maximum number of drops:	128
End of Line Terminator:	120Ω (Built-in)
Static Protection (ESD):	Up to 15KV
Dimensions (H x W x D):	16 x 32 x 115 mm (0.63 x 1.3 x 4.5 in) (with Termination Boards)
Weight:	47 g (1.66 oz) (with Termination Boards)
Operating Temperature:	-10ºC to 50ºC (14ºF to 122ºF)
Operating Humidity:	Up to 90% RH (no condensation)

PIN ASSIGNMENT

TTL Side (DB-9 Male Connector / Terminal Block):

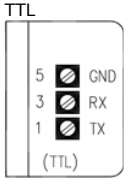
DB-9 Male Connector:	1	3	5
Terminal Block:	TX	RX	GND
Function:	TTL OUT	TTL IN	GND

RS-485 Side (DB-9 Male Connector / Terminal Block):

DB-9 Male Connector:	1	3	5	6,7	9
Terminal Block:	A+	B-	GND	Jumper (120)	+5V
Function:	RS485+	RS485-	GND	If shorted (Jumper ON - default), the 120Ω End of Line Terminator is ON	+5V

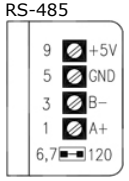
Termination Boards:

TTL



- Numbers on the left indicate the pin assignment of DB-9 Connectors (TTL side).
- TX is the TTL Output, RX is the TTL Input.

RS-485



- Numbers on the left indicate the pin assignment of DB-9 Connectors (RS-485 side).
- Connect an external +5VDC regulated power supply to +5V and GND.
- Turn ON the 120Ω End of Line Terminator only when the RS-485's distance is over 200m (660ft).

CONNECTIONS

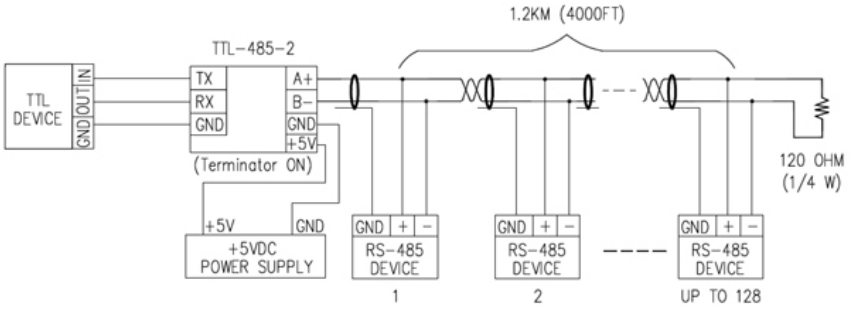


FIGURE 1: MASTER-SLAVE MULTI-DROP CONNECTIONS (RS-485)

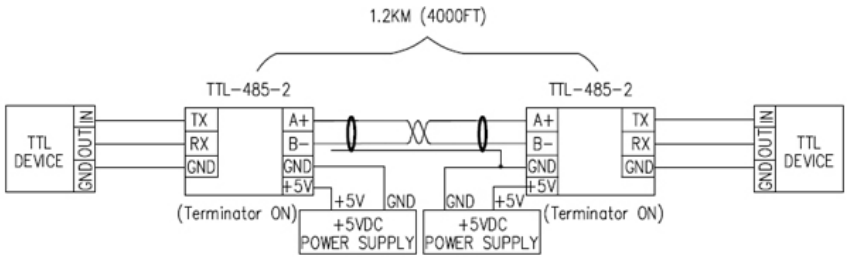


FIGURE 2: EXTENDING TTL DISTANCE

INSTALLATION NOTES

- Be sure that the DC power applied to pin +5V and GND is within the range of +4.75V to +5.25V (5V ±5%). Excessive input voltage or incorrect polarity connection could damage the converter.
- The 120Ω End of Line Terminator adds heavy DC loading to a system, connect it only when the RS-485's distance is over 200m (660ft).
- If TTL-485-2 is connected to any outdoor devices, please ensure that proper lightning protection is employed to prevent your devices from being damaged by lightning strikes.

TTL SIGNAL LEVELS

TTL Input	TTL Output
High (>2.0V)	High (>2.4V)
Low (<0.8V)	Low (<0.4V)

TROUBLESHOOTING

- Measure pin +5V and GND with a Volt meter, and be sure that it is within the range of +4.75V to +5.25V (5V ±5%). Excessive input voltage or incorrect polarity connection could damage the converter.
- Perform a Loopback test by using CommFront's 232Analyzer software: Connect TX (TTL Out) to RX (TTL In), and then send commands from the 232Analyzer software (Note: To communicate with the TTL-485-2 from a PC, a RS232/RS485 converter is required). You should get an echo of the commands sent. By performing a simple Loopback test like this, you can test both the Transmitter and Receiver of the RS-485/TTL converter. This is very helpful when you are in doubt about the performance of your converter.