
Contents

OVERVIEW	2
Features	2
General Description	3
Functional Block Diagram.....	4
LED indicator functions	4
Termination Switches	5
Quick Test.....	5
Installation	6
Installation when used with Multiple Devices	7
Specifications	8
Declaration of Conformity 2001	9

OVERVIEW

The **Control-it™ 5251** is a fully automatic RS232 to RS485 converter, making it easy for you to communicate with external devices on RS485.

It has auto baud-rate detection, optical isolation, and automatic transmission control all in the same unit.

Just plug the **Control-it™ 5251** into the serial port and off you go!

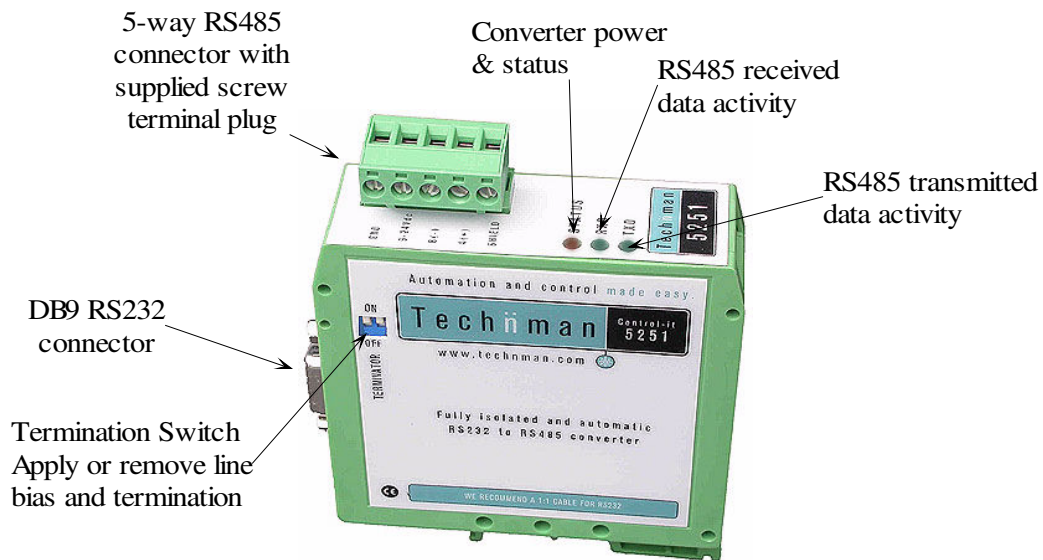
Features

- Auto baud-rate detection. It adjusts itself to the data transmitted and causes a turnaround within 200µsec at a baud rate of 9600bps.
- Fully isolated to prevent any damage to your computer caused by high voltage or by a short circuit of the external device(s).
- No transmission control (RTS and DTR) signals are necessary.
- 1.8km transmission range at 115.2k baud or 3.6km at 56k baud and less.
- No separate power supply is needed for the RS232 side.
- Lid mounted indicator LEDS allow you to see clearly that the converter is correctly connected to external devices and that data is being received and transmitted.
- Very fast turnaround time for data that is 8 bit no parity.
- Connection of up to 32 modules to one converter.

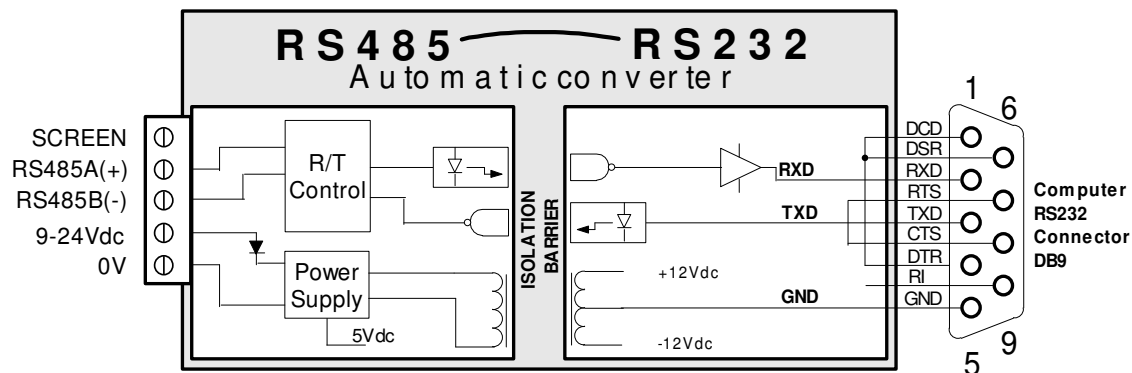
General Description

The **Control-it™ 5251** comes in a DIN rail mountable, flame-retardant case for use within standard electrical cabinets.

The top panel carries the RS485 connector and indicator LEDs. The RS232 connector is on the left hand side and the front panel has the termination switch in the upper left corner.



Functional Block Diagram



LED indicator functions

RXD	Indicates data flow <u>to</u> the PC
TXD	Indicates data flow <u>from</u> the PC
STATUS	Has three functions:

- A Steady light when initially connected indicates power is applied to the RS485 port. After sending approximately 5 characters (such as a carriage return) it will adjust to one of the two modes:
- A Single pulse every two seconds indicates *the unit is in UART mode*, where each character is checked individually for quick turnaround at the end of transmission. Maximum turnaround delay is 2 bits. The converter will use this mode if 8 bit no parity or 7 bit with parity is used. For example at 9600bps the turnaround delay time is $(2/9600)$ 0.2ms.
- A Double pulse every two seconds indicates *the unit is in timed mode*, where the turnaround time is one character length or 11 bits. The converter will go into this mode if non-standard data is used. For example at 9600bps the turnaround delay time is $(11/9600)$ 1.1ms

Termination Switches

These switches apply the correct bias for the data line when in the idle state, as well as placing a 120Ω terminating resistor across it.

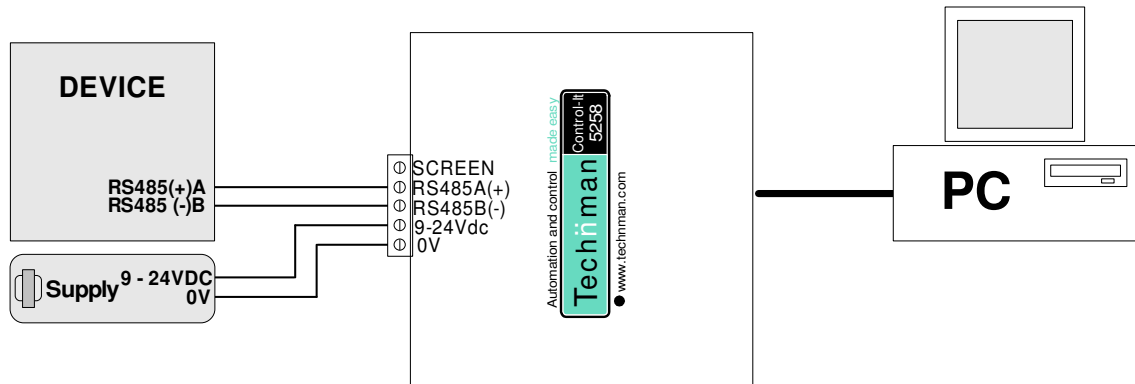
Normally these switches should be ON, but in a network involving more than one converter, only those on the very ends of the data line should be ON – all others should be OFF.

Quick Test

This test is designed to give you a quick indication that the computer is communicating with the converter.

1. Plug converter into serial port COM1 & apply power (9-24Vdc) to the RS485 side.
2. Go into DOS mode and type the following: **copy con: com1:**
3. Press the **ENTER** key
4. Type a few characters followed by **CTRL Z**.
5. Watch the TXD light as you press the **ENTER** key. The typed characters will be sent to COM1 and the TXD light on the Converter lights up momentarily.

Installation



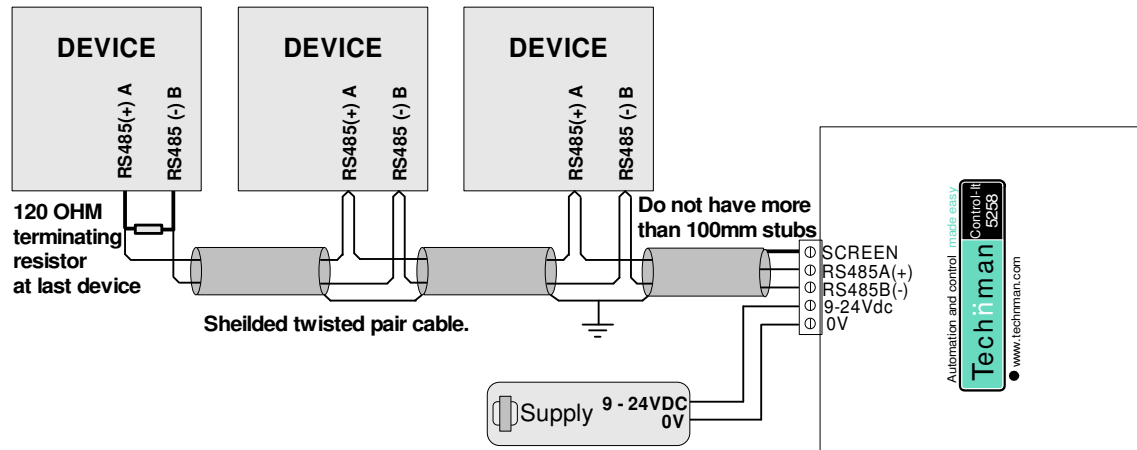
1. Connect the DB9 connector to a **COM** port on your PC.
2. Wire the RS485 connector to your device.
 - We recommend a **shielded, twisted pair** data cable. **Do not** remove more than 100mm of shield from each end of the cable when connecting to devices. Connect shield to ground at **one point only**.
 - For short wire communication, such as bench-top or laboratory set-ups, no screened data cable is necessary between the converter and your device, unless it is in an electrically noisy environment.
 - If the cable is longer than 300m, connect a 120 Ω terminating resistor at the far end, across the positive and negative data lines of the twisted pair cable i.e. between **RS485 A (+)** and **RS485 B (-)**.
3. Connect the power supply (9 - 24Vdc) to the converter. The **STATUS** light will come on at this point.



Make sure 24V does not get connected to the RS485 terminals.

Installation when used with Multiple Devices




The **Control-it™ 5251** can be connected with up to 32 devices on the one network.



- Always connected devices in 'daisy-chain', as shown, with each device connected in a row. Never connect devices in a 'star', as each branch will create unwanted reflections, leading to data errors.
- A cable branch to a device that is less than 5 meters long is acceptable.

If more than one converter is attached to the network, all apart from the two on the very ends of the line, must have their Termination switches in the OFF position.

Specifications

Case Dimensions	80 x 25 x 75 mm (3¼ x 1 x 3")	
Weight	90g (3ozs)	
DIN mount	32 x 15mm, EN50035	
	35 x 7.5mm, EN50022	
	15 x 5mm, EN50045	
Storage temperature	-20° to 70° C (-4° to 158° F)	
Operating temperature	0° to 50°C (32° to 122° F)	
Humidity	15 to 90% relative non condensing	
Transmission Distance	1.8km (6000 feet) at 115.2k baud	
	3.6km (12000 feet) at 56k baud	
Isolation Voltage	1500V max transient ¹	
Power	9-24Vdc regulated or unregulated 35mA at 12Vdc on RS485 side	
Connectors	RS232	DB9 female
	RS485	Plug-able screw terminal connector. 0.2 - 2.5mm ² (AWG 24 -12)
Operating mode	2 wire half-duplex point-to-point or multi-drop	
Data rates	300 to 115200 bps	
Indicator lights	TXD, RXD, STATUS	

¹ EN 60950 : 1992

Declaration of Conformity 2001

Manufacturer's Name: Technman Electronics Ltd
Manufacturer's Address: PO Box 302 107, Auckland 1330, New Zealand

declares that the product

Product name: Control-it 5000 Series Distributed Input/ Output System
Model numbers: 5001, 5005, 5006, 5007, 5020, 5030, 5040, 5050, 5100, 5101, 5251, 5258
Product options: All

conforms to the following product specifications:

Safety Regulations: Low Voltage Directive 73/23/EEC 22 July 1993 and the UK Electrical Equipment Safety Regulations 1994.
EN 60950:1992+A1+A2+A3- Primary Circuit/ Double insulation
Model 5020- Primary circuit/ Reinforced insulation
Except when these modules are incorporated into a larger mechanical device, in which case a responsible person must ensure that all appropriate safety regulations are met.

EMC Regulations: EMC Directive 89/336/EEC 3 May 1989 and 92/31/EEC 28 April 1992, article 10.1.
EN 55022:1998 Class A Device
EN 55024:1998 I.T. Equipment
EN 50082-2:1995 Generic Industrial Device

The product herewith complies with the requirements of the following Directives and carries the CE marking accordingly:

Low Voltage Directive 73/23/EEC
EMC Directive 89/336/EEC

The product was tested in a typical configuration with a personal computer system.

For compliance information contact:

Director
Technman Electronics Ltd.
PO Box 302 107
Auckland 1330
New Zealand.

or

Quality Assurance Director
Amplicon Liveline Ltd
Centery Industrial Estate
Hollingdean Road
Brighton
UK BN2 4AW

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Rev D

Notes