INTERCONNECTING PRODUCTS AND CABLES

485HF9

RS-232 TO RS-422/RS-485 CONVERTER

Description

The Model 485HF9 Converter is a hi-speed, 9-pin plug-in module designed to convert the single-ended RS-232 signals on a small PC COM port into differential RS-422 or RS-485 signals. Signal conversion is completely bidirectional - outgoing RS-232 signals are converted to RS-422/RS-485 levels and incoming RS-422/RS-485 differential signals are converted into single ended RS-232 signals. Besides its use with PCs, the Model 485HF9 Converter can be used on any 9-pin RS-232 device whose pinout matches that of a PC's COM port. Once equipped with the Model 485HF9 Converter, the PC or RS-232 device can communicate with other RS-422 or RS-485 devices.

Communicate with RS-485 Devices

The Model 485HF9 converter can be used in several applications. The most common one is to convert RS-232 signals on a PC's COM port to interface one or more RS-485 (RS-422) devices as shown in Figure 1. The small size of the Model 485HF9 converter and its female connector lets it plug directly into the communication port on the rear of the PC computer or onto any device with a 9-pin male RS-232 connector. The device's signal pinouts should match the PC signal pinouts listed in Table 1.

Extend RS-232 Signals

Figure 2 shows how two Model 485HF9s can be used to extend the distance between two RS-232 devices up to 1,200 meters and at the same time increase their resistance to outside interference. Typical applications are PC-to-PC data transfer or a PC to one or more remote devices.

The past approach to extending RS-232 links beyond the specified 50 foot limit has been to reduce the baud rate to compensate for cable length and noise pickup. Still, noise sources such as fluorescent light ballasts, motors easily corrupt single ended RS-232 signals and create erroneous data transmission. The reduction in the data transfer rate is objectionable to the user and does not allow newer PCs to be used at their higher transfer rates. Using the Model 485HF9 Converters to transmit RS-485 signals at rates up to 1 Mbs eliminates the slowdown in data thruput.

Delivered Configuration

The Model 485HF9 is shipped with the case open so the user can easily change the unit's configuration. The configuration is changed by severing links between pads and/or by bridging pads on the PCB. Table 2 lists the shipped configuration which handles most full and some half duplex systems.

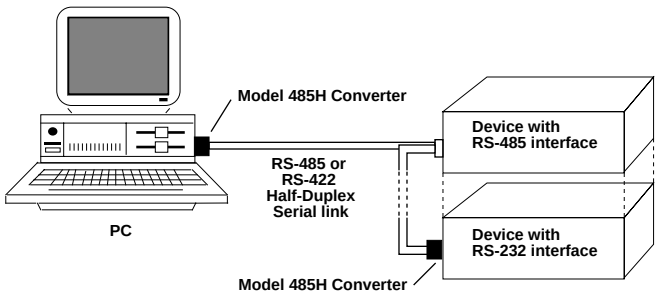

Figure 1 Model 485 Converter Connects a RS-232 Device to one or more RS-422 or RS-485 Devices.

- Convert single ended RS-232 signals to RS-485 (RS-422) differential signals. *Bidirectional data transfer.*
- New hi-speed version provides 1 Mbs data rates. *Works with the fastest data systems.*
- Extends RS-232 transmission distance to 1.2 Km. *Overcomes RS-232's 50 foot cable limit.*
- Increased common mode noise rejection provides greater noise immunity against EMI/RFI signal interference. *Reduces data errors.*
- Adds multi-drop capability to an RS-232 signal. *Drives multiple loads.*
- Removeable crew terminal strip for RS-485 signal and power connections. *Easy signal connections.*
- Manufactured to ISO 9000 and meets new European Electromagnetic compatibility requirements. *Improved quality product.*

CE Approved

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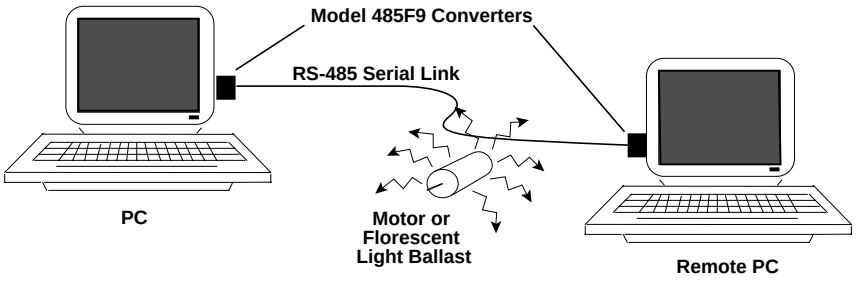

Figure 2 A Pair of 485HF9 Converters extends Serial Transmission Distance up to 4000 feet and increases Noise Resistance over RS-232 Serial Links.

TABLE 1
PC SIGNAL PINOUT

Pin Number	Signal
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	Data Terminal Rdy
5	Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	-

TABLE 2
SHIPPED CONFIGURATION

Setting	Default	Option
Transmit Enable	TXEN	RTS
Rcvr termination	In	Out
Rcvr enabled	Always On	When Xmtr Off

Connections and Power

The two RS-485 or RS-422 signal pairs are connected to screw terminals at the rear of the unit. Two wire, half-duplex operation is accommodated by jumpering the same polarity TX and RX terminals together. The Model 485HF9s use a small amount of DC power which is supplied on two of the screw terminals. A wall mounted, 9 Vdc power module is included with each Converter.

The RS-232 hardware handshake signals are looped back to enable the RS-232 device. RTS can be used instead of the external TXEN signal to enable the RS-485 transmitter by changing the Transmit Enable jumper inside the 485HF9. If an RTS signal is not available, refer to our Magic 485F9 data shee

Compatibility with Earlier Units

The 485HF9 is an improved hi-speed version of the earlier 485F9 Converter and is functionally interchangeable with it. The 485HF9 can be used in any application that used the earlier 485F9.

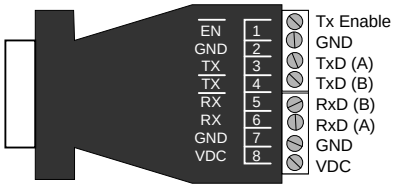

Figure 3 Model 485HF9 Terminal Connections

Software Support

The 485HF9 operates with many commercially available communications packages or Windows languages that support RS-422 or RS-485 communication. A COMBIOS software toolkit is available for DOS and Windows applications that do not have communication capability.

SPECIFICATIONS

RS-232 Specifications

Connections	DE 9 pin female connector
Input Voltage	
Space or On	+2.4 to +30 V
Mark or Off	-30 to +0.8 V
Input Resistance	5 Kohm (typ.)
Output Voltage	+9 V or -9 V
Output resistance	300 ohm (typ)

RS-485 Specifications

Connections	8 screw terminals
Output Drive	1.5 V min. fully loaded
Output Load	27 ohms (32 receivers)
Rcvr Termination	120 ohms when configured 'In'
Data Rate	120 Kbaud over 1200 meters

Power Requirements

Voltage	+5.0 to +12 Vdc via screw terminals
Current	50 ma min 100 ma full load

Physical

Size
67 mm L x 43 mm W x 20 mm H
(2.63" L x 2" W x 0.62" H)

Temperature

Operating	0 to 60 °C
Storage	-20°C to +70°C

ORDERING INFORMATION

	Part Number
RS-232 to RS-485 Converter with 9-pin female connector. Includes complimentary Power Supply Adapter	485HF9
RS-232 to RS-485 Converter with 9-pin female connector but without a Power Supply Adapter	114316
For 230 Vac Adapter. Specify plug style: -E (Europe), -B(UK), -A(Australia) i.e. 485HF9-E	