



FEATURES

- Plugs Directly Onto Serial Port
- Miniature Size
- Very Low Cost
- No Separate Power Supply Required (If +12VDC is not available on the connector, the Model CONPS is required).

DESCRIPTION - MODEL CON422(/F)

The Model CON422 converts unbalanced RS-232 signals to balanced RS-422 signals. The RS-422 standard uses a balanced voltage digital interface to allow communications of 90k bits per second on cable lengths of 400 feet. Ten receivers can be connected to any one drivers for use in multi-drop systems.

The RS-232 port uses a male DB-25 type connector with pins 2 (TD input) and 3 (RD output) supported. Protective ground (pin 1) and Signal Ground (pin 7) are also connected. The RS-422 port uses a female DB-25 type connector with the Send Data outputs on pins 2 and 14, and the Receive Data inputs on pins 5 and 17. Protective Ground (pin 1) and Signal Ground (pin 7) are connected through to the RS-232 connector. To eliminate the need for an external power supply, +12VDC must be available on pin 25 of the RS-422 side of the device.

The Model CON422/F is identical to the CON422 except the gender of the connectors is reversed. The RS-232 side has a DB-25 female connector and the RS-422 side has a DB-25 male connector.

Interconnection of the Converter with Another RS-422 Device

- 1. The polarity of the two RS-422 lines must be correct. With no data being sent, the RS-232 line should be negative and the RS-422 "A" terminal (pin 2) should be negative with respect to the "B" terminal (pin 14). If your equipment uses a + and - naming scheme, in most cases the A line will be connected to the "-", and the B line will be connected to the "+".
- 2. The wire recommended in the RS-422 Standard is number 24 AWG Copper conductor, twistedpair telephone cable with a shunt capacitance of 16 pF per foot.
- 3.For long runs and/or high data rates, it is recommended that the wires be terminated with a resistor at the receiver end. The twisted pair usually used has an impedance of about 100



ohms, therefore a 100 ohm resistor is normally used for the termination. The RS-422 side of the converter requires more power as the transmission line is increased and as the termination resistor value is reduced, therefore it may be necessary to use a termination resistor that is larger than 100 ohms.

- 4. The RS-422 driver has the ability to drive 10 RS-422 receivers connected in parallel. A system of multiple receivers may require some experimentation with location and size of termination resistors, line lengths, grounding etc.
- 5. The RS-422 standard recommends that Protective Ground (pin 1) be connected to a good "green wire" ground. This may be already connected in your RS-232 equipment. Protective Ground and Signal Ground should be connected through to each end of the system and be connected to each other using a 100 ohm 1/2 watt resistor at one end only. If a shielded twisted pair is used, the line should be connected to Protective Ground.

CON422 SCHEMATIC





DESCRIPTION - MODEL CON485(/F)

The Model CON485 converts unbalanced, full-duplex RS-232 signals to balanced, half-duplex or halfduplex RS-485 signals. RS-485 is an enhanced version of the RS-422 balanced line standard. It allows multiple drivers and receivers on a two-wire system.

The RS-232 port uses a male DB-25 type connector with pins 2 (TD input) and 3 (RD output) supported.

Protective Ground (pin 1) and Signal Ground (pin 7) are also connected. The RS-485 port uses a female DB-25 type connector with the Send Data outputs on pins 2 and 14, and Receive Data inputs on pins 5 and 17. Protective Ground (pin 1) and Signal Ground (pin 7) are connected through to the RS-232 connector.



INTERCONNECTION DIAGRAM

The polarity of the two RS-485 lines must be correct. With no data being sent, the RS-232 line should be negative and the RS-485 "A" terminal should be negative with respect to the "B" terminal. If your equipment uses a "+" and "-" naming scheme, in most cases the "A" line will be connected to the "-" and the "B" line will be connected to the "+". The RS-485 driver must be enabled when checking the polarity of the output of a RS-485 driver. On this converter, the RTS input (pin 4), on the RS-232 side must be raised to enable the RS-485 driver.

The Interconnection Drawing shows how to interconnect two RS-485 converters using two signal wires. The resistors Rt are optional, depending onthe line length, baud rate, etc. The resistors should be about the inpedance of the line used, which is normally about 120 ohms each. Termination resistors are installed only at each end of the RS-485 multi-drop network. RTS must be off (low or marking) to receive and on (high or spacing) to transmit. Both RTS's should not be on at the same time. Although you will not damage anything, the data sent will be garbled. If both RTS lines are off, the line may be floating and random data may appear on the outputs. Your protocol should allow for this if it can happen.

Up to 32 receivers can be driven by any one generator. This allows you to put together large systems with many drop points. The termination resistors should be located approximately at opposite ends of the system.

Proper operation of any RS-485 system requires the presence of a signal return path. The RS-485 Standard recommends that a third wire be used for this. For safety, a 100 ohm resistor should be connected between pin 7 and the "reference" wire at every drop point. While it may be possible to interconnect signal grounds (pin 7s) directly, this is not recommended due to the danger of circulating currents possibly being present.

No wire type or maximum run length is listed in the RS-485 Standard. However, the RS-422 Standard, which is very similar, recommends 4000 feet of number 24 AWG twisted-pair telephone cable with a shunt capacitance of 16 pF per foot.





Model CON485

ORDERING GUIDE

Model CON422 RS-232 male, RS-422 female Model CON422/F RS-232 female, RS-422 male Model CON485 RS-232 male, RS-485 female Model CON485/F RS-232 female, RS-485 male Model CONPS External power supply adapter



4

1-800-523-2320

http://www.indcompsrc.com