JED MICROPROCESSORS PTY. LTD.

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J990 RS232 to 20mA loop isolated interface.

- Interconnects RS232 systems (e.g. a PC) to industrial systems (e.g. PLC) via the 20mA loop standard.
- Loop current flows in normal state (broken by TX byte, giving a security alarm if line broken (overrun error in communications software).
- Isolation rated at 2,500 volts.
- Allows multi-dropping with a number of stations connected in series with no special TX ‘‘connect-to-line’’ control software needed.
- RX can monitor transmission on line, so verifying transmission is actually happening on the serial network.

This device is designed with five functions in mind:

1. To extend the common RS232 communication standard to distances of 1 Km. or more.

2. To eliminate the problem of ground currents and common mode voltages which can exist between the grounds of electronic equipment separated by distance, especially in industrial or rural-agricultural applications of computers.

3. To totally protect the computing or data logging equipment at both ends of a data link from accidental connection of one or more signal connections between equipment to a high voltage, e.g. 240 volt mains or surges induced by lightning.

4. To allow connection between existing 20-mA interface equipped systems and RS232C connections on JED or other control computers, or PC’s from any source, which usually have RS232C only communication facilities.

5. This device is particularly useful in interfacing Programmable Logic Controllers to PC’s.

Data Path.

RS232 data is fed through a Hewlett Packard HCPL4100 current loop transmitter/isolator. Both terminals of this driver are available on screw terminals on the isolated side. 20 mA loop current passes through the LED of a 20 mA opto-isolator receiver (HCPL4200) and the output is converted back to RS232 data.

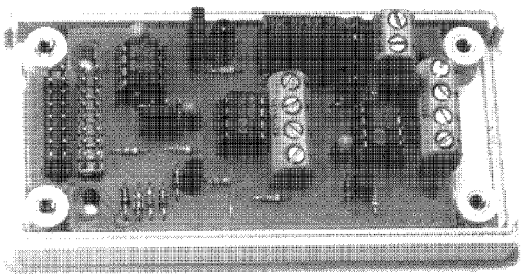
The RS232 connections are two rows of stake pins configured in such a way that a ribbon cable can mate directly with a D25 connector as a DTE or DCE device.

Loop Power Supply.

There is no electrical connection between the RS232 and the 20 mA sides, so power for the loop cannot come from the RS232 system. Power for the RS232 output is actually generated from the RS232 signals themselves.

A simple bridge rectifier and filter capacitor with two 20 mA active current sources is provided for the transmit and receive loops. This power supply is normally fed with a 12-15 volt AC or DC signal from a double insulated plug pack which is available as an option. Loop power is normally provided to a system for both transmit and receive loops from one end of a system and so one plug pack can power both loops and is needed at only one end.

Performance is quoted by HP at 20 KBaud data rate at 400 metres. Curves shown on the data sheets show a linear relationship between speed and line length. Induced noise isolation is excellent, even with unscreened cables, although in extreme cases shielded cables could help. However performance is many times better than an RS232 system with the added advantage of complete isolation of the wiring from the computers at either end.



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