ENTERPRISE
COMPUTERS LTD

31-37 Hoxton Street
London N1 6NJ
Telephone 01-739 4282
Telex 22717 ENTER G

APPLICATION NOTE NO. 29

Serial Transfers between the IBM PC and the Enterprise.

Construction of the following cable will enable the connection of the serial port built into the Enterprise to the serial card for the IBM PC, thus enabling the transfer of data and programs between the two machines via a specified Enterprise channel opened to its serial port.

Note that due to the nature of the signals on the IBM serial card complete handshaking cannot be implemented. This should cause few real problems in practice as it only affects data transmissions from the Enterprise to the IBM and the IBM has a fairly large buffer. However it may be the cause of unexpected "Write Fault" errors from the serial card driver on the IBM at the beginning of a data transfer if the channels to the Enterprise serial port are not opened and closed at the right moment.

The Enterprise serial handler does no translation of data so it is possible to transmit and receive any bytes of data and thus machine code programs can be transferred. However due to software drivers within the IBM which control serial data reception all "Carriage Returns" sent to the IBM via a device are stripped. Note if two consecutive "Carriage Returns" are found this is taken as the end of the file being sent just as if the end-of-file character (Control Z) had been found. Note that a line feed (Control J) will not be stripped.

Transfer of Files.

To avoid write fault errors being reported on the IBM all commands should be followed in strict sequence.

Enterprise to IBM

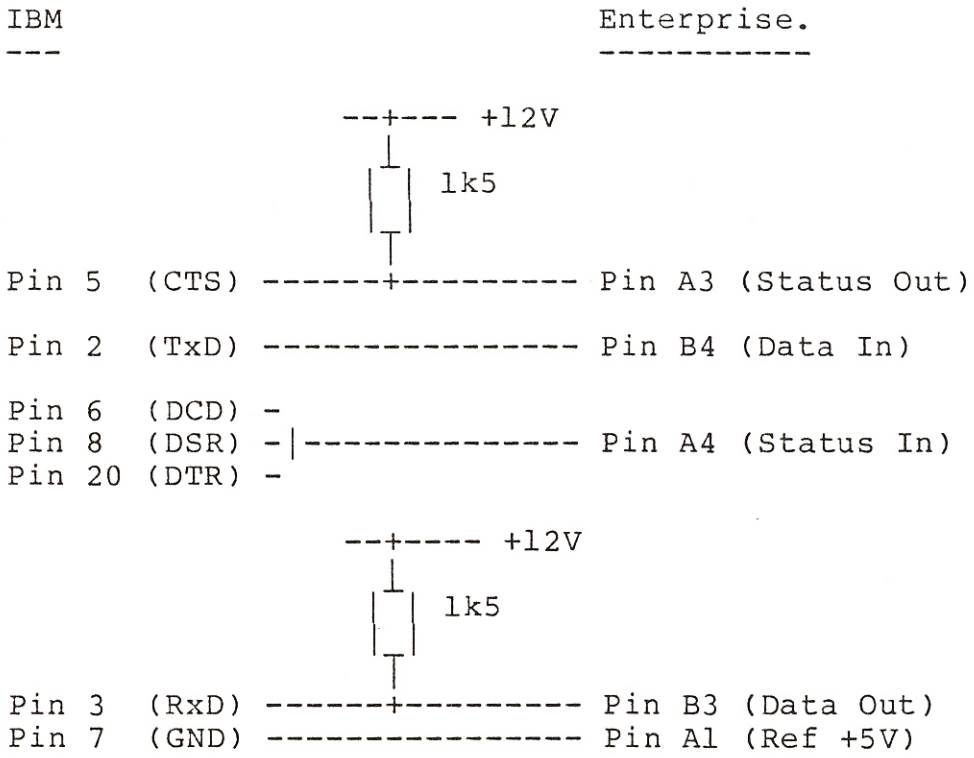
```
(IBM)          copy com1: filename
(Enterprise)   open £111:"serial:" access output
               copy from £10 to £111
```

IBM to Enterprise

```
(Enterprise)   open £111:"serial:"
               copy from £111 to £10
(IBM)          copy filename com1:
```

Notes.
All commands for IBM are DOS ones and for Enterprise are BASIC. All Enterprise channel numbers above 110 are not closed when the BASIC RUN command is given and so the channels used above should be closed if already open before any of the above commands are given.
In the above examples channel £10 is assumed to be already opened to the device required, for a disk the relevant command would have been 'open £10:"disk:filename" access output' and for the tape 'open £10:"tape:filename" access output'.
Since the Enterprise BASIC COPY command does not translate any of the data, if it comes from a serial port then the STOP key should be pressed to terminate the copy from the IBM at the end of the file once the IBM has finished sending and all activity has ceased on the Enterprise.
Before any transfers are attempted the serial baud rate on both machines should be set to the same rate, which can be done for the Enterprise from BASIC eg. for 9600 baud 'SET SERIAL BAUD 15'.

Cable Schematic.



Notes. Two 1k5 pullup resistors are required in order that the Enterprise be able to drive the IBM serial card properly. These should be connected to +12V, with reference to the Enterprise Ground ie. pin B1 of the serial port. It is recomended that the 12V come from an external regulated power supply, although experiments have found the resistors can be connected to pin 20 (DTR) of the IBM serial port for this source instead in which case no connection to pin B1 is required, but this is not

guaranteed to work.

To ensure that the voltage swings obtained by using the ref +5V are not shorted out it is important to make certain that there is no alternative common ground connection between the two machines, such a situation may well arise via the grounded shield on the monitor leads. These problems may be overcome if one machine (and its associated peripherals) is not connected to ground at any point.