

Interface 1bis for the Sinclair ZX Spectrum

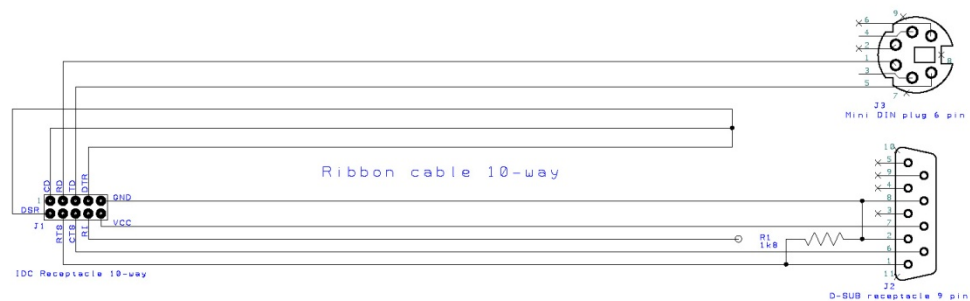
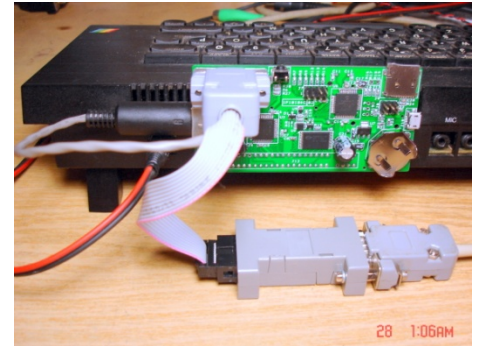
Asynchronous serial port

1. Hardware

1.1 Duplex asynchronous serial cable

The cable plugs into the joystick and mouse connectors of the Interface 1bis and is sensed, at power-up, by the microcontroller's firmware, which then programs USART 1 and the joystick port for asynchronous serial communication, using following pins:

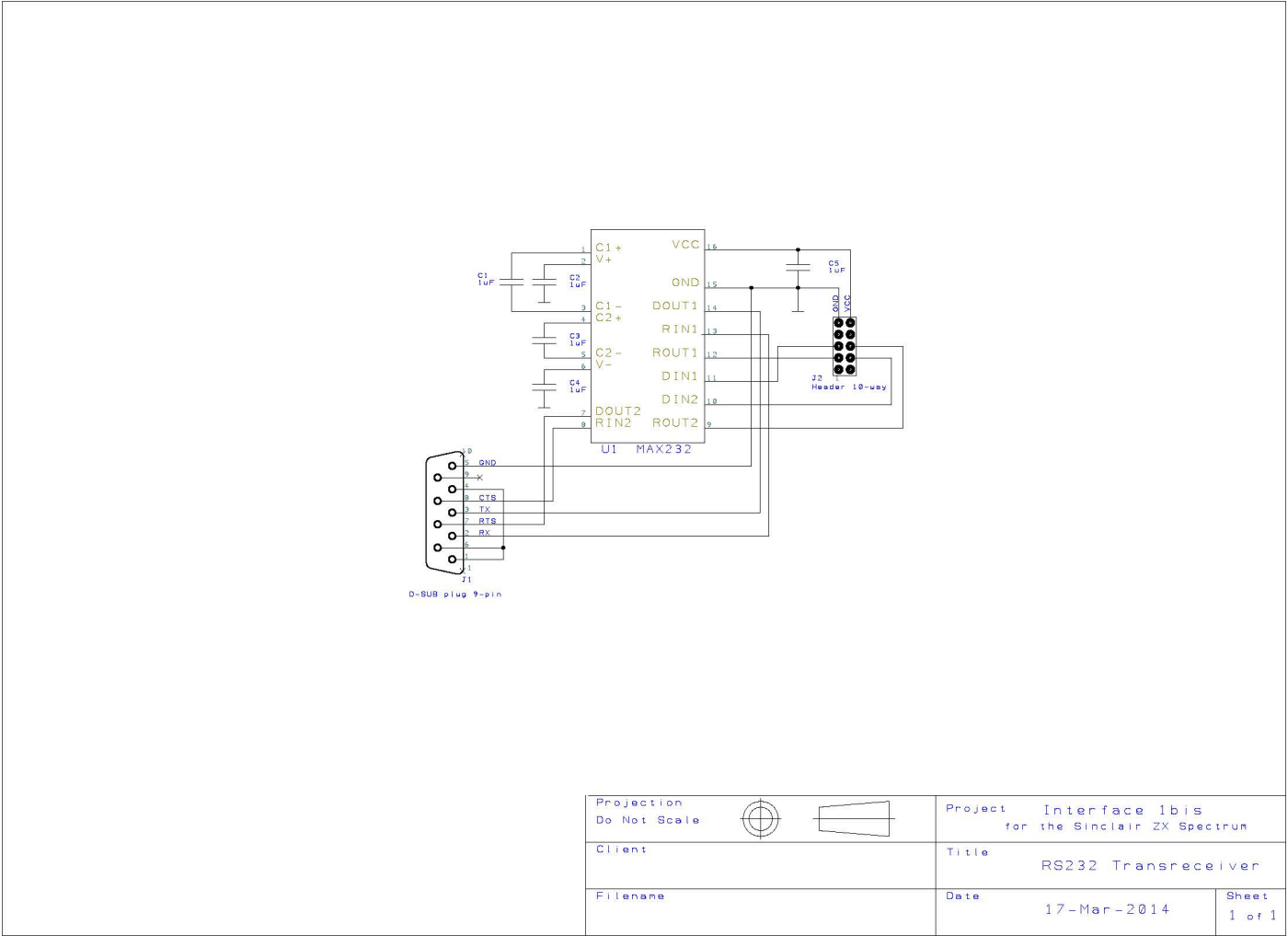
Mouse connector: pin 1 = nRD
pin 5 = nTD
Joystick connector: pin 1 = nRTS
pin 6 = nCTS



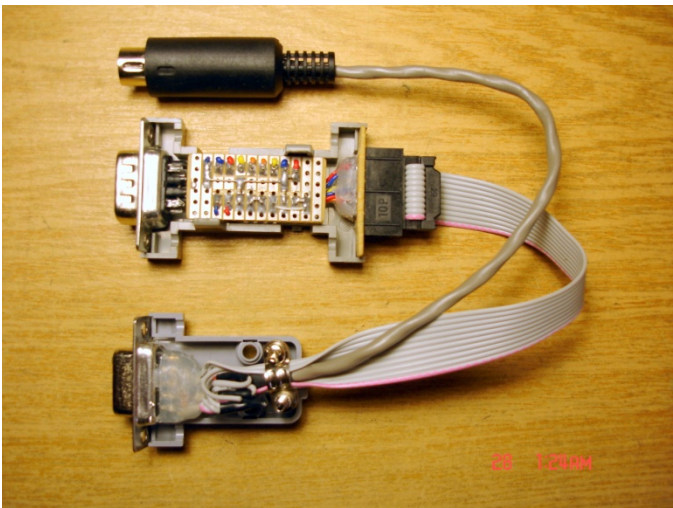
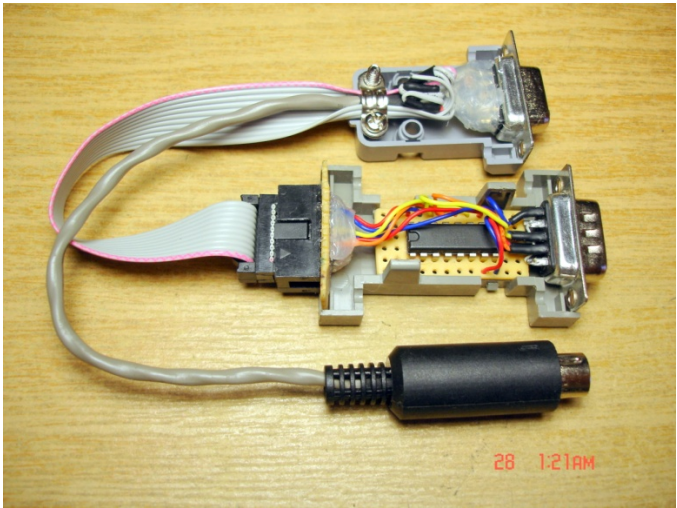
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The cable is terminated with a standard pin-out 10-way IDC connector, yet carrying a 5V power supply line on pin 10.

The interface's TTL/CMOS signals can be converted to RS232 levels using a double trans-
receiver, like the MAX232.

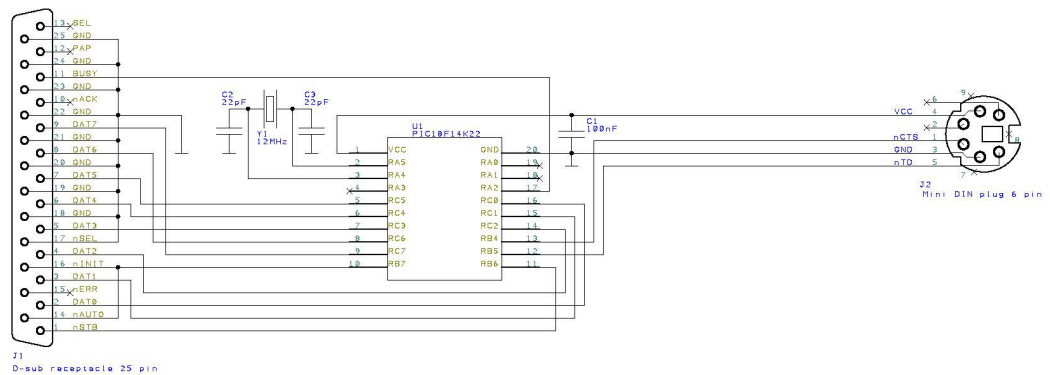
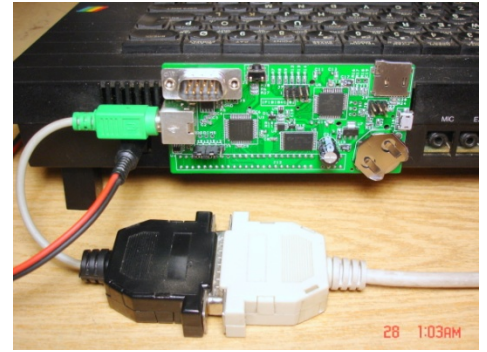


The microcontroller firmware implements automatic hardware RTS/CTS handshake, using a 256
byte input buffer. The Baud rate can be set between 300 and 115200 bit/s.

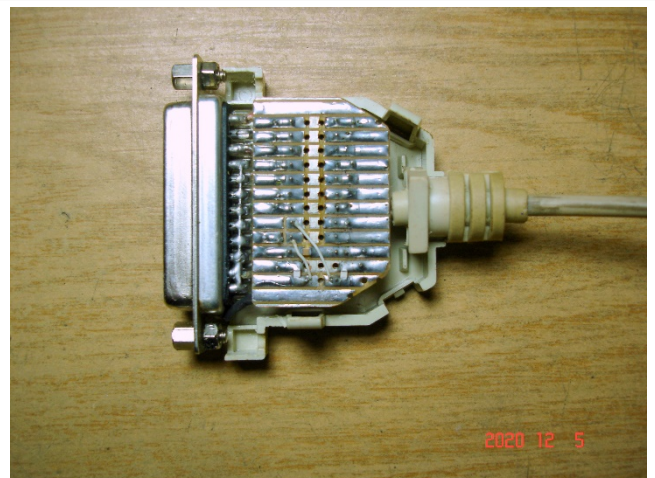
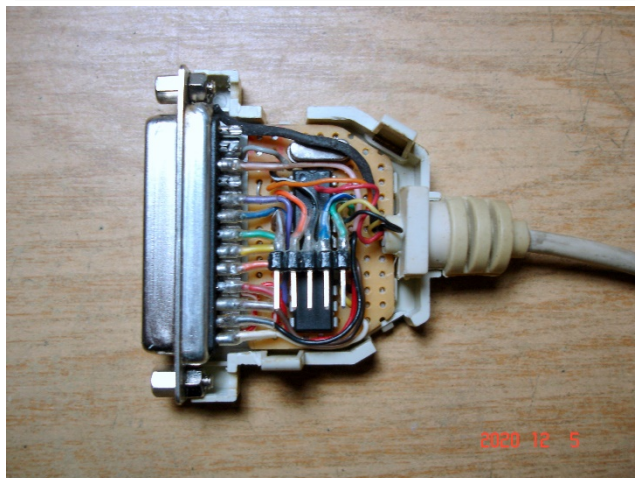


1.2 Parallel printer cable

The cable plugs into the interface's mouse connector and is sensed, at power-up, by the microcontroller's firmware, which then programs USART 1 for asynchronous serial transmission, over pin 5, using pin 1 for the nCTS signal. A dedicated microcontroller converts the serial data stream into an IEEE 1284 compatible output for a parallel printer, using a 256 byte input buffer.



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2. Software

2.1 Asynchronous serial communication

The Interface 1bis operating system supports asynchronous serial communication over streams opened to the "B" channel, if a suitable cable is attached.

Only FORMAT and OPEN#, followed by PRINT#, INKEY\$, INPUT# or MOVE instructions can be used with the "B" channel, whereas SAVE, LOAD, VERIFY and MERGE operations are not implemented.

- The Baud rate specified in the command

FORMAT "B";<Baud rate>

is rounded up to the next larger standard value in the set:

300, 600, 1200, 2400, 4800, 9600, 19200, 57600, 115200

- Besides the original Interface 1 hook codes:

#1D 'RS2323 Input' and

#1E 'RS2323 Output'

which work as expected, two further ones are provided:

#4B 'Receive from RS232 port' – Receive up to (C) bytes (1-240) at address (HL).

Return the actual number of received bytes in (C)

#4C 'Transmit to RS232 port' – Transmit (BC) bytes (1-512) from address (HL)

2.2 Parallel printing

When a suitable cable is attached, the operating system redirects all printing output from the server machine to the serial transmit-only port. The "B" channel can be used to send control codes directly to the printer spooler.

The printer's initialization string can be customized using the command:

CAT 0;"p<string>"