

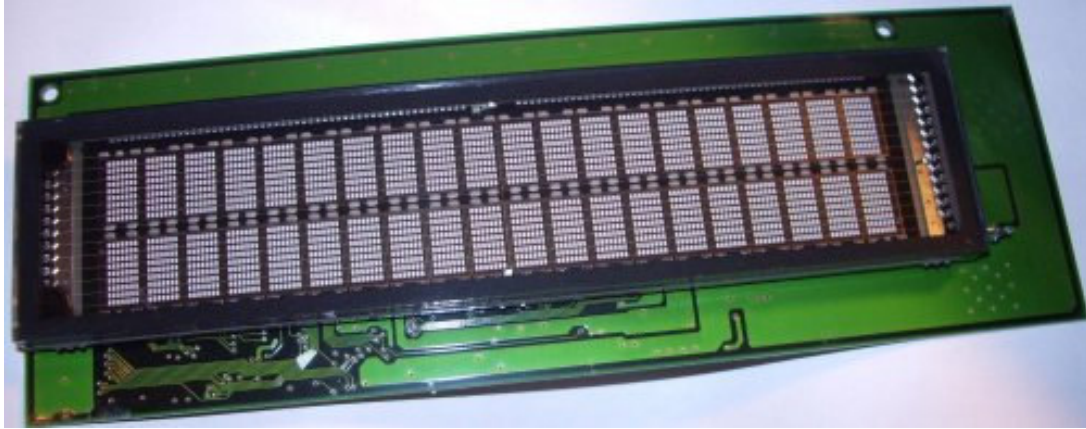
**Information about the NCR 5972
2x20 characters
Vacuum Fluorescent Display (VFD)**

with

Futaba M202LD08A display module

**V1.0
10/3/2010**





Specifications:

Power supply: 12 V, 800 mA

Support for 32K PROM external character sets

2x20 character display, 7x9 pixels per character

Connections:

The display has both serial and parallel interfaces. Either one can be used, but NOT both at same time.

Serial protocol is RS232 (-10V..+10V levels), 9600 baud, 8 bits, no parity, 1 start, 1 stop

Parallel protocol is Printer port compatible (5 Volts)



Connector layout (view from rear of display, top character line is pointing upwards). The table below shows the signals names as seen from the PC's Printer port perspective:

24	22	20	18 gnd	16 gnd	14 +12V	12 +12V	10 /ackn	8 gnd	6 busy	4 gnd	2 /strobe
23	21	19	17 gnd	15 D0	13 D1	11 D2	9 D3	7 D4	5 D5	3 D6	1 D7

Connector layout (view from rear of display, top character line is pointing upwards). These are the signals names as seen from the PC's Serial port perspective:

24 DTR	22 RTS	20 TXD	18 gnd	16 gnd	14 +12V	12 +12V	10	8 gnd	6	4 gnd	2
23 DSR	21 CTS	19 RXD	17 gnd	15	13	11	9	7	5	3	1

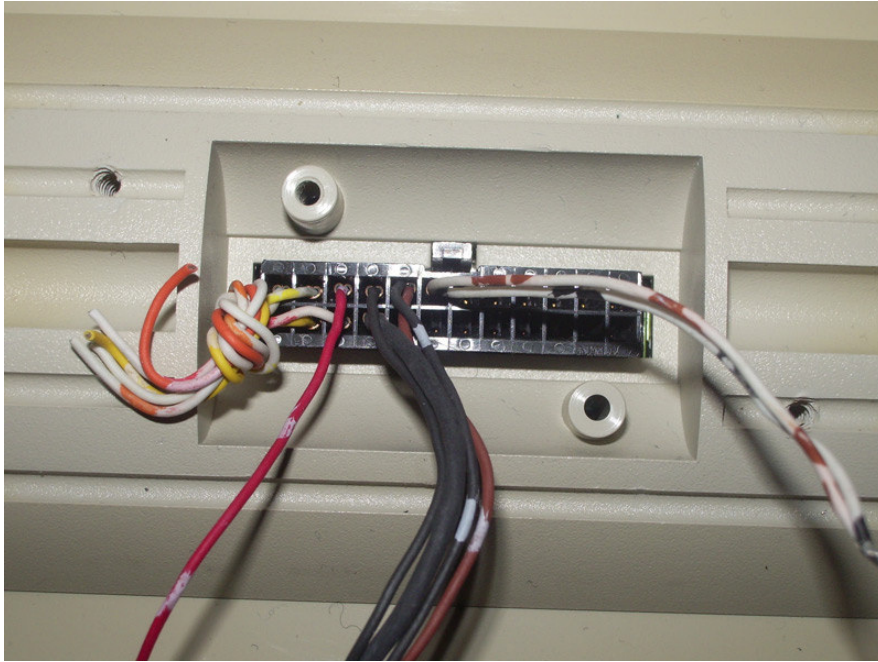
Note: the display's serial input is Pin 20. That pin is connected to TXD on the PC side.

Note: you don't need to connect DTR, DSR, CTS and RTS. RXD is also optional.

Display Connector 24 pin	RS232 9 pin PC port
..	
18 Gnd	5 Gnd
19 (output)	2 RXD
20 (Input)	3 TXD
21 (output)	8 CTS
22 (input)	7 RTS
23 (output)	6 DSR
24 (Input)	4 DTR

Above is the full cable layout for PC serial port to display. GND and TXD should be sufficient.

Below is a picture of the original serial port cable that is used for the display. The red-white wire on left side is TXD, three black wires in centre are GND, the white-brown and white-black wires on the right are +12V. The remaining wires DTR, DSR, RTS, CTS and RXD are not used.



Using the display:

After power-on, the display will perform a selftest. During that time (about 4 sec), the CTS and Busy lines will become active (-10V and +5V respectively). The selftest turns on all pixels for 2 sec and then displays the firmware number. The display will then be cleared and it enters the LOW POWER state. The module will NOT display anything until it is activated again!
Send hexadecimal command code '1B', '05' to wake up the display and allow normal operation and text display.

Check the user guide for other command codes and features.

References:

<http://www.maltepoeggel.de/html/vfd/>

<http://www.elektronikforumet.com/forum/viewtopic.php?p=400363&highlight=&sid=bdaf80078628d308964978e92>

User's Guide NCR 5972 2x20 Customer Display
Release 2.0, BD20-1372-A, Issue F. (Available on Malte Poeggel website)