IEEE 1284

Bi-directional parallel communications standard

IEEE 1284 can operate in five modes:

- **Compatibility Mode**, also known as *Centronics*, standard or SPP, is a uni-directional implementation.
- **Nibble Mode** is a uni-directional interface that allows the device to transmit data four bits at a time using status lines for data.
- **Byte Mode** allows the device to transmit 8 bits at a time using data lines.
- **Enhanced Parallel Port** (**EPP**) is a half-duplex bi-directional interface designed to allow devices to transmit large amounts of data.
- **Extended Capability Port (ECP)** is a half-duplex bi-directional interface similar to EPP, except that PC implementations use DMA to provide faster data transfer than EPP.

Connector Types

Port Addresses

Traditionally IBM PC systems have allocated their first three parallel ports according to the configuration in the table below.

PORT NAME	Interrupt #	Starting I/O	Ending I/O
LPT1	IRQ 7	378h	37fh
LPT2	IRQ 7	278h	27fh
LPT3	IRQ 5	3bch	3bfh

Pinouts

Bit to Pin Mapping for the Standard Parallel Port (SPP):

Address		MSB							LSB
	Bit:	7	6	5	4	3	2	1	0
Base (Data port)	Pin:	9	8	7	6	5	4	3	2
Base+1 (Status port)	Pin:	~11	10	12	13	15			
Base+2 (Control port)	Pin:					~17	16	~14	~1

~ indicates a hardware inversion of the bit.

Pinouts

| Pin No (DB25)	Signal name	Direction	Register - bit	Inverted
1	nStrobe	Out	Control-0	Yes
2	Data0	In/Out	Data-0	No
3	Data1	In/Out	Data-1	No
4	Data2	In/Out	Data-2	No
5	Data3	In/Out	Data-3	No
6	Data4	In/Out	Data-4	No
7	Data5	In/Out	Data-5	No
8	Data6	In/Out	Data-6	No
9	Data7	In/Out	Data-7	No
10	nAck	In	Status-6	No
11	Busy	In	Status-7	Yes
12	Paper-Out	In	Status-5	No
13	Select	In	Status-4	No
14	Linefeed	Out	Control-1	Yes
15	nError	In	Status-3	No
16	nInitialize	Out	Control-2	No
17	nSelect-Printer	Out	Control-3	Yes
18-25	Ground	-	-	-

Pinouts

The original IBM-PC's Parallel Printer Port had a total of 12 digital outputs and 5 digital inputs accessed via 3 consecutive 8-bit ports in the processor's I/O space.

- 8 output pins accessed via the **DATA Port**
- 5 input pins (one inverted) accessed via the **STATUS Port**
- 4 output pins (three inverted) accessed via the **CONTROL Port**
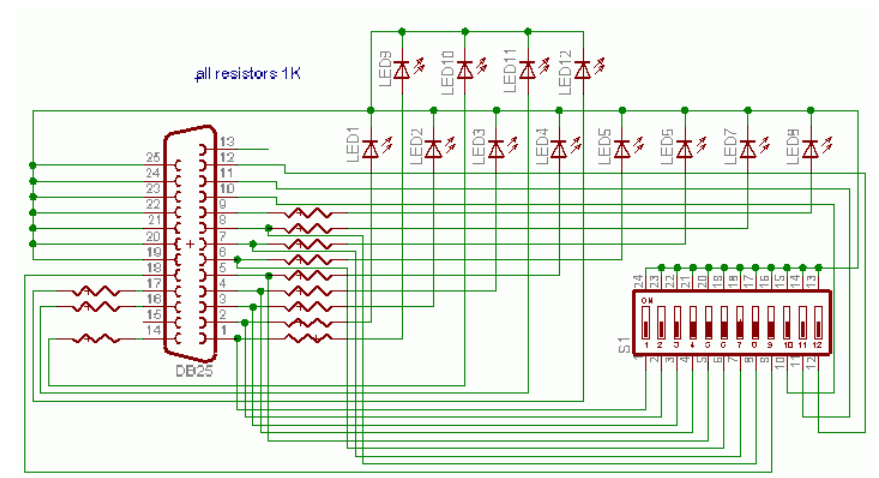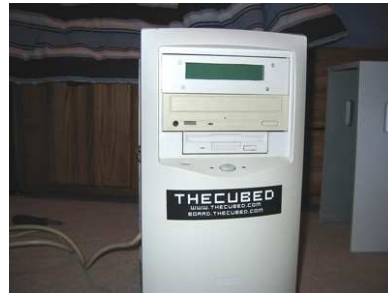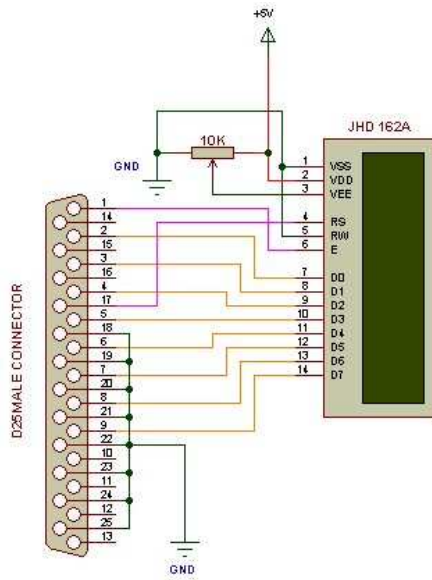- The remaining 8 pins are grounded
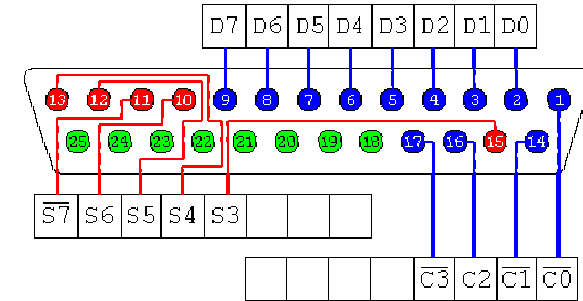
Signals diagram
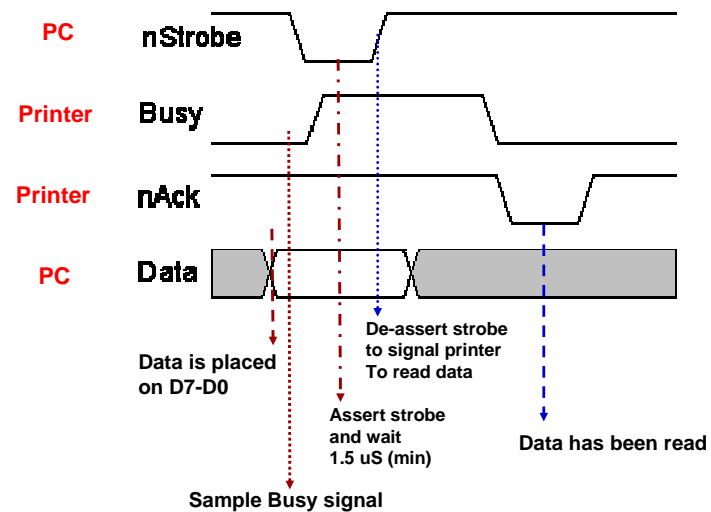
Applications: Simple I/O (SW & LED)

Applications: Parallel port LCD

Applications: 8255 Interfacing