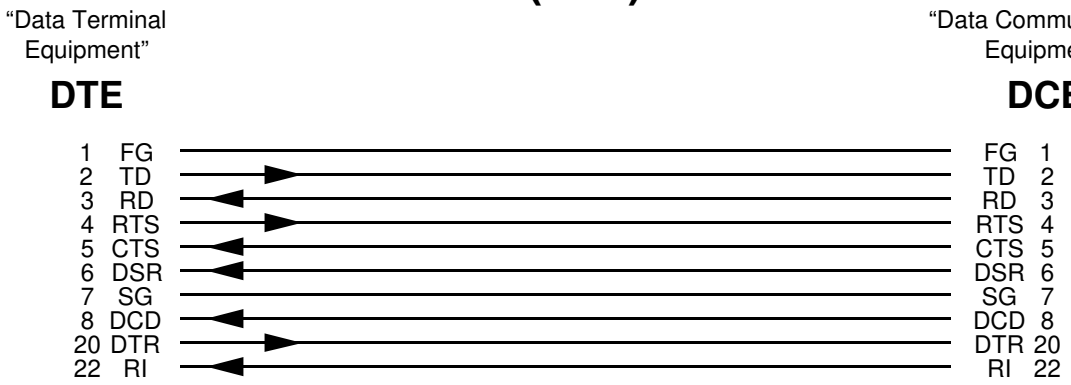
# The RS232 (V24) Standard

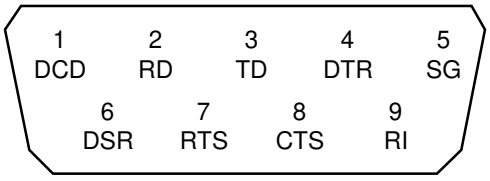



**Connectors** are 25-pin 'D' type. By convention the DTE has a male connector and the DCE has a female one, but this is not always adhered to.

**Signal Levels** are +12V and –12V, referenced to SG (lower voltages are often used, e.g. +/–9V)

| *Level* | *TD/RD* | *Other lines* |
|---|---|---|
| +12V | **0** | **Active** |
| –12V | **1** | **Inactive** |

The **Maximum Length** of an RS232 cable at 9600 bits per second is specified as 75 feet. This is deliberately conservative, and lengths of 1000 feet or more usually work in practice.

| | *Pin* | *Abbr* | *Name* | *Description* |
|---|---|---|---|---|
| **Voltage Reference** | 7 | SG | Signal Ground | *All voltage levels are referenced to this line (0V).* MUST *be connected!* |
| **Data Transfer** | 2 | TD | Transmit Data | *Serial data from terminal (DTE) to modem (DCE)* |
| | 3 | RD | Receive Data | *Serial data from modem to terminal* |
| **Flow Control** (Hardware handshaking) | 4 | RTS | Request To Send | *Terminal uses this line to enable or halt the flow of data from the modem* |
| | 5 | CTS | Clear To Send | *Modem uses this line to enable or halt the flow of data from the terminal* |
| **Call control** | 20 | DTR | Data Terminal Ready | *Indicates terminal is connected and switched on. If this signal is removed, modem will terminate call in progress* |
| | 8 | DCD | Data Carrier Detect | *Indicates modem is communicating with remote modem; dropping this signal indicates call has been lost* |
| | 6 | DSR | Data Set Ready | *Indicates modem is connected and switched on. Generally ignored.* |
| **Miscellaneous** | 22 | RI | Ring Indicator | *Indicates phone line is ringing. Generally not used.* |
| | 1 | FG | Frame Ground | *Chassis earth. Not needed.* |

Given that most of the 25 pins are not used for asynchronous links, IBM PCs often use a 9-pin connector instead to save space.