Serial Cables for modems

COLLABORATORS			
	TITLE : Serial Cables for modems		
ACTION	*NAME*	*DATE*	*SIGNATURE*
WRITTEN BY		April 16, 2022	

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME

Contents

Chapter 1

Serial Cables for modems

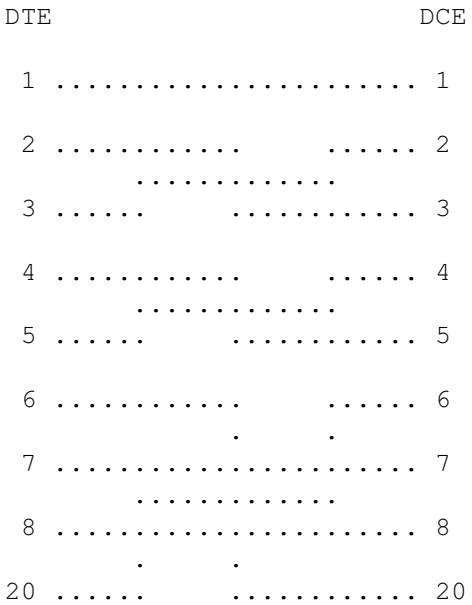
1.1 Serial Cables for modems

```
  Serial modem Cable


                            pc       AMIGA
RS-232 Definition        Computer/Terminal        Modem
     Signal                     DTE                 DCE
                           9-pin      25-pin        25-pin
-------------------------------------------------------------------
GND  Signal GND             5          1             1
TXD  Transmit Data          3          2             2
RXD  Receive Data           2          3             3
RTS  Req. to Send           7          4             4
CTS  Clear to Send          8          5             5
DSR  Data Set Ready         6          6             6
GND  Chassis GND            -          7             7
CD   Carrier Detect         1          8             8
DTR  Data Term. Ready       4          20            20


  CONNECTORS


DB-9 Connector

    Pin   Signal                    Pin  Signal
-------------------------------------------------------------------
     1    CD   Carrier Detect       6   DSR  Data Set Ready
     2    RXD  Receive Data         7   RTS  Request to Send
     3    TXD  Transmit Data        8   CTS  Clear to Send
     4    DTR  Data Term. Ready     9   RI   Ring Indicator
     5    GND  Signal GND


DB-25 Connector

    Pin   Signal                    Pin  Signal
-------------------------------------------------------------------
```

1	GND	Ground / Shield	14		{2nd TXD}
2	TXD	Transmit Data	15		Transmit Clock
3	RXD	Received Data	16		{2nd Rec. Clock}
4	RTS	Request to Send	17		{Receive Clock}
5	CTS	Clear to Send	18		{Unassigned}
6	DSR	Data Set Ready	19		{2nd RTS}
7	GND	Ground	20	DTR	Data Term Ready
8	DCD	Carrier Detect	21		{Sig. Quality}
9		{Reserved}	22	RI	Ring Indicator
10		{Reserved}	23		{Data Rate Sel.}
11		{Unassigned}	24		{Transmit Clock}
12		{2nd CD}	25		{Unassigned}
13		{2nd CTS}			

NULL MODEM CABLE

RS-232 Definition		Computer/Terminal		Modem
Signal		DTE		DCE
		9-pin	25-pin	25-pin
GND	Signal GND	5	1	1
TXD	Transmit Data	3	2	3
RXD	Receive Data	2	3	2
RTS	Req. to Send	7	4	5
CTS	Clear to Send	8	5	4
DSR	Data Set Ready	6	6	20
GND	Chassis GND	-	7	7
CD	Carrier Detect	1	8	8
DTR	Data Term. Ready	4	20	6



Null modem cables (Several variations)

The first variation is explained in an excert from the ZIP162 DOC file. The ZIP program will allow computer <> computer file transfers through a null modem cable. It can even clone itself over the cable (in case the disk drives are not compatible/working).

I have tried this cable with Central Point Software's DriveMap 1.0 program and Lap Link V 5.0. It works perfectly. Also note if you build a 25 <> 25 pin cable and you need to connect to a 9 pin COM port that a STANDARD 9F > 25M adapter and/or adapter cable will connect the correct pins.

I have not tried a 9 <> 9 pin cable using a 25F > 9M adapter. It may or may not work. I don't have an cable of this type to check.

SERIAL NULL MODEM CABLES, in various combinations of 9- and 25-pin connectors, are available from a wide variety of sources, and a simple cable in the configuration you need (for example, DB9 to DB25 female) should cost less than $10 at Radio Shack or many computer stores. Double-headed null modem cables (both 9 and 25 pin on each end) are also made, and would be ideal for use with ZIP; I am told that a good source for these is:
DALCO, 233 Pioneer Blvd, Springboro OH 45066; (800)445-5342

If you're building or shopping for a cable, you need a "null modem" cable, meaning the transmit and receive data lines should be crossed, and the signal ground connected straight through. (The pin numbers depend on whether you have a small DB9 or large DB25 connector, see figure.) No other connections should be needed; ZIP uses no hardware handshaking lines. (NOTE: ZIPDUP does require the DTR connections between pins 20/4 and 6.)

```
        |--COMPUTER 1--|          |--COMPUTER 2--|
         DB9F or   DB25F           DB25F or   DB9F
      pin 2 - - - - 3 - - - - - - - - 2 - - - - 3   \ transmit &
          3 - - - - 2 - - - - - - - - 3 - - - - 2   / receive data
          5 - - - - 7 - - - - - - - - 7 - - - - 5   - signal ground

      pin 4 - - - - 20  - - - - - - - 6 - - - - 6 * \
          6 - - - - 6 - - - - - - - - 20  - - - 4 *  \ handshaking (optional)
          7 - - - - 4 - - - - - - - - 5 - - - - 8    / *(required for ZIPDUP)
          8 - - - - 5 - - - - - - - - 4 - - - - 7   /
```

Actually, any serial cable that doesn't work by itself, should work with a "null modem adapter" attached. If available, use a well shielded cable; high speed transmissions can be especially susceptible to RF interference."

In talking around and asking several Tech. support persons I received some variations on the null modem cable. Below are the most to least common types 'believed' to work. (Using the chart layout from above)

```
        |--COMPUTER 1--|          |--COMPUTER 2--|
         DB9F or   DB25F           DB25F or   DB9F
      pin   - - - - 1 - - - - - - - 1 - - - -
          3 - - - - 2 - - - - - - - - 3 - - - - 2
          2 - - - - 3 - - - - - - - - 2 - - - - 3
          7 - - - - 4 - - - - - - - - 5 - - - - 8
          8 - - - - 5 - - - - - - - - 4 - - - - 7
```

```
          6 - - - - 6 - - - - - - - - 20- - - - 4 (As you can see here, pins
          1 - - - - 8 - - - - - - - - 20- - - - 4 6 & 8 are jumped together
          4 - - - - 20- - - - - - - - 6 - - - - 6 and join the 20 on the
          4 - - - - 20- - - - - - - - 8 - - - - 1 other end (both ways)).


        |--COMPUTER 1--|          |--COMPUTER 2--|
         DB9F or   DB25F           DB25F or   DB9F
      pin   - - - - 1 - - - - - - - - 1 - - - -
          3 - - - - 2 - - - - - - - - 3 - - - - 2
          2 - - - - 3 - - - - - - - - 2 - - - - 3
          8 - - - - 5 - - - - - - - - 20- - - - 4 (As you can see here, pins
          6 - - - - 6 - - - - - - - - 20- - - - 4 5, 6 & 8 are jumped together
          1 - - - - 8 - - - - - - - - 20- - - - 4 and join the 20 on the
          4 - - - - 20- - - - - - - - 5 - - - - 8 other end (both ways)).
          4 - - - - 20- - - - - - - - 6 - - - - 6
          4 - - - - 20- - - - - - - - 8 - - - - 1


        |--COMPUTER 1--|          |--COMPUTER 2--|
         DB9F or   DB25F           DB25F or   DB9F
      pin   - - - - 1 - - - - - - - - 1 - - - -
          3 - - - - 2 - - - - - - - - 3 - - - - 2
          2 - - - - 3 - - - - - - - - 2 - - - - 3
          7 - - - - 4 - - - - - - - -   - - - -   (4 & 5 jumpered on one end
          8 - - - - 5 - - - - - - - -   - - - -   but don't connect thru.)
            - - - -   - - - - - - - - 4 - - - - 7 (4 & 5 jumpered on one end
            - - - -   - - - - - - - - 5 - - - - 8 but don't connect thru.)
          6 - - - - 6 - - - - - - - - 20- - - - 4
          4 - - - - 20- - - - - - - - 6 - - - - 6


The above 9 pin connections were 'figured out' using the 9<>25 pin
adapters with the following pinouts.

This is the pin outs for adapters from<>to 9<>25 pin cables.

        |-- 9F <> 25M --|                    |-- 25F <> 9M --|
         DB9F or   DB25M                     DB25F or   DB9M
      pin 1 - - - - 8 - - -                     - - - - 1 - - - -
          2 - - - - 3 - - -                   3 - - - - 2 - - - -
          3 - - - - 2 - - -                   2 - - - - 3 - - - -
          4 - - - - 20- - -                   20- - - - 4 - - - -
          5 - - - - 7 - - -                   7 - - - - 5 - - - -
          6 - - - - 6 - - -                     - - - - 6 - - - -
          7 - - - - 4 - - -                   4 - - - - 7 - - - -
          8 - - - - 5 - - -                     - - - - 8 - - - -
          9 - - - - 22- - -                     - - - - 9 - - - -


  LAPLINK 3 - SERIAL CABLE WIRING


All connectors are female
```

```
   DB9  DB25   -   DB25  DB9

    3     2    -     3    2
    2     3    -     2    3
          4    -     5
          5    -     4
    6     6    -    20
    5     7    -     7    5
         20    -     6    6
 shroud shroud   shroud  shroud
```

DESKLINK 2 - SERIAL CABLE WIRING

All connectors are female

```
   DB9  DB25  TEL              ___          Tel cable is reversed
                              |   |
    3     2    4            __|   |__      1 blue   -  yellow 4
    2     3    1           |          |     2 red    -  green  3
          4                |          |     3 green  -  red    2
          5                |          |     4 yellow -  blue   1
    6     6                | 1 2 3 4  |
    5     7    2+3         |__________|
         20                                 Tel socket viewed from plug entry
  scr.   scr
```

Serial cable DB25 to DB9

```
25 pin          9 pin
connector       serial adapter
                on computer
                (cable connector is female)

                                    Signal Direction
                                      DCE-ADAPTER
                                    Cable-Computer

   DB25                           DB9
     8     Carrier Detect          1        >
     3     Received Data           2        >
     2     Transmitted Data        3        <
    20     Data Terminal Ready     4        <
     7     Signal Ground           5        -
     6     Data Set Ready          6        >
     4     Request to send         7        <
     5     Clear To Send           8        >
    22     Ring Indicator          9        >
```

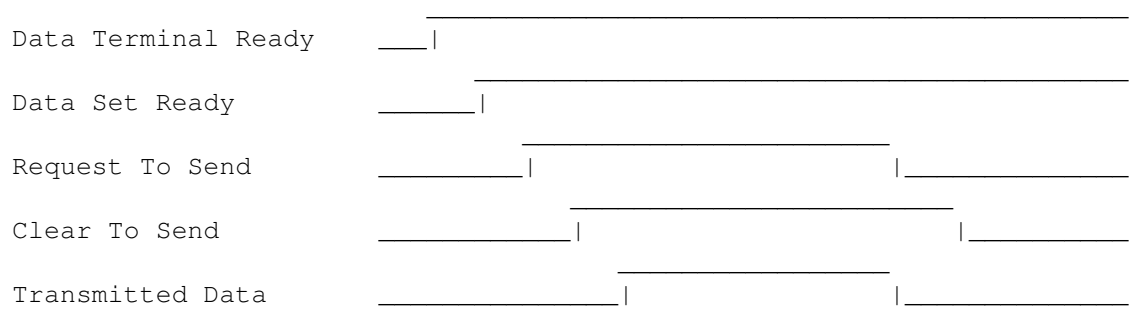
RS-232C INTERFACE STANDARD

Data terminal equipment (DTE) is typically a computer.
Data Communications equipment (DCE) is typically a modem.

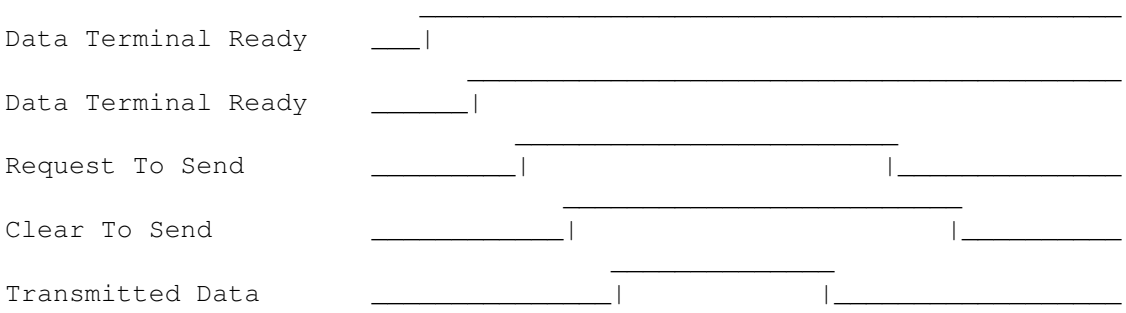
DTE Data Terminal Equipment		DTE Modem Data Communications Equipment
Signal Direct	EIA / CCITT Line Number	Pin No.	Telephone Co. Lead Number	Signal Direction
-	Protective Ground	1	AA/101	-
-	Signal Ground	7	AB/102	-
-	Transmitted Data	2	BA/103	>
<	Received Data	3	BB/104	-
-	Request to Send	4	CA/105	>
<	Clear to Send	5	CB/106	-
<	Data Set Ready	6	CC/107	-
-	Data Terminal Ready	20	CD/108.2	>
-	Connect Data Set to line	20	* /108.1	>
<	Received Line Signal Detector	8	CF/109	-
-	Speed Select	23	CH/111	>
<	Transmit Signal Element Timing	15	DB/114	-
<	Receive Signal Element Timing	17	DD/115	-
-	Select Standby	11	* /116	>
<	Ring Indicator	22	DE/125	-
-	Test	18	* /*	>

* means non-defined/standardised by EIA / CCITT

Switched Timing Sequence (dial-up line communication)



Nonswitched Timing Sequence (direct line connection)


Data Terminal Ready
Data Terminal Ready
Request To Send
Clear To Send
Transmitted Data