## Accessing a Sentry Switched CDU via Modem

All Sentry Switched Cabinet Distribution Unit "CW" models contain an RJ45-type serial port which allows local out-of-band terminal access to the Sentry Remote Power Manager system. For *remote* out-of-band access, a variety of devices – such as an external modem – can be used. This technical note documents both the serial port adapter required to make a proper modem-to-Sentry connection and the modem configuration required to support a dial-up terminal session.

### Modem Adapter

Included with each Sentry Switched CDU "CW" unit is one RJ45-crossover/rolled (8P8C"X") patch cable and one RJ45-to-DB9F serial port adapter. These items allow a standard PC's DB9M-DTE serial port to connect to the Sentry. To connect the Sentry to a dial-up modem, a different serial port adapter (not included with Sentry) must be used and is illustrated here. The adapter may be purchased through Server Technology, part number ADP-0027.
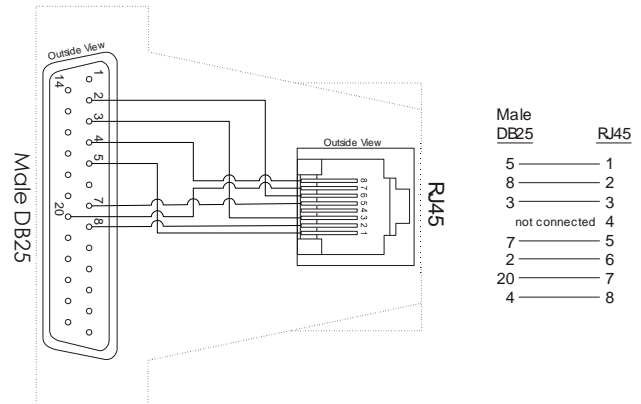


### Configuring the Modem

The modem must be configured properly before connecting the modem to the Sentry Switched CDU. You will need the user manual for the modem and will need to configure the modem for the following parameters per the instructions accompanying the modem.

In certain cases, items in the list below may be followed with a modem register identifier listed in parentheses. Although these are generally correct for most modems, it is recommended you refer to the modem's user manual for verification.

1.  Auto-answer must be enabled (S0=x, where "x" is the number of rings on which to auto-answer.)

2.  Carrier-Detect (CD) function of the modem must be "normal" such that the modem's CD signal output is asserted whenever a modem-to-modem connection exists, and not asserted when a connection does not exist. Through the adapter, the modem's CD output signal is used for the "device-ready" input on the Sentry Switched CDU. The CD function is sometimes selected by a DIP-switch on the modem, but is also configurable via modem command (&C1).

3.  Echo should be off (E0).

4.  Result codes must be disabled. This is also known as quiet mode (Q1).

5.  Data Terminal Ready (DTR) operations must be set to "normal" such that the modem hangs-up (goes on-hook) when the modem's DTR-input goes to a low state (&D2).

6.  The modem must be configured to support a fixed Data Terminal Equipment (DTE) bit rate; this is the rate that the modem uses to communicate to the locally attached Sentry. The rate must be valid and must match the data rate setting for the Switched CDU's serial port. The default data rate for the Sentry serial interface is 9600 bps but can be changed to support any of the following data rates (baud rates): 2400, 4800, 9600, 19200, 38400, 57600, and 115,200. Any other data rate (such as 23040) will result in communications failure. The selected data rate of the Switched CDU serial port *must* match the DTE data rate of the external modem.

The command(s) required to configure the modem's DTE data rate will vary from manufacturer to manufacturer. Refer to the modem's user manual or contact the manufacturer of the modem for assistance in managing the modem's DTE rate. If modem calls to the Sentry are answered, and a modem-to-modem connection occurs but no response is received from the Sentry, the cause is usually an invalid data rate.

Only the DTE rate needs to be fixed to match the data rate expected by Sentry. The Data Communication Equipment (DCE) rate – the rate used between the two modems over the telephone lines – is not required to match the Sentry's serial port rate. Compression and error correction can remain enabled, and the DCE rate can vary by connection, but the DTE rate to the Sentry *must* remain fixed.

In addition to the required settings previously outlined, the modem should also be configured with the following considerations:

- The required settings should be stored in the modem's non-volatile memory (NVRAM) - (&W0 and &W1).

- The modem should be configured to reset to the NVRAM stored profiles, not to factory defaults, upon receiving a Reset command or during initial power on. This is usually a DIP-switch option or a command specific to the brand of modem. Refer to the modem's user manual.

- If connection problems persist, follow the modem manufacturer's instructions to disable error correction and/or data compression. In many cases, disabling data compression also succeeds in making the modem's DTE rate follow the connection rate. This way the caller generally has control over the speed – by setting the data rate of the terminal used for originating the call to match the rate expected by the Sentry.

**NOTE:** The DB9-female adapter and RJ45-rolled cable included with the Sentry Switched CDU may be used, along with the DB25-Male Modem Adapter illustrated in this document, for direct terminal communication between a PC with a DB9M serial port and the external modem. Simply use both adapters and the RJ45-rolled cable to communicate with the modem directly and configure it as outlined above. Once the modem is configured correctly, remove the cable from the RJ45-end of the DB9-female adapter and attach it directly to the Switched CDU's serial port.

Many modems generate small amounts of undesired random data or "noise" when a disconnect occurs. While much has been done to avoid the possibility of this "noise" causing problems, it is always best to end a dial-up modem session using Sentry's **Quit** or **Logout** command. When you issue a **Quit** or **Logout** command, Sentry's "device-ready" output, known as Data Terminal Ready (DTR), goes to a low state for two seconds. This signal is tied to the external modem's DTR-input, which should immediately hang-up as a result of the state change. Erroneous data has no effect while Sentry's DTR-output is low. Avoid ending a dial-up session solely by initiating a hang-up of the modem used to originate the call.

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