

Technical Reference

Capstone Remote Monitoring System (User Edition)

This document presents the control and monitoring features for the User Edition Capstone Remote Monitoring System (CRMS) software.

Chapter 19: RS-232 Interface

This chapter presents RS-232 interface information.

The MicroTurbine Controller provides two serial ports for communication interface:

- **User Port** (9-pin)
- **Maintenance Port** (25-pin)

Overview of RS232 Interface

The operator may connect a computer (using a null modem adapter) or a modem (direct serial-to-serial cable) to either the maintenance port or the user port.

A modem connected to the Maintenance Port or to the User Port, is detected automatically and configured for automatic answer by the Power Controller software as part of the configuration check during the power up sequence.

The default hardware configuration for each port is 57,600 bits per second, 8-bit word length, no parity, and hardware handshake for flow control.

User Serial Port Connector Pinouts

The user port is a standard DB9 type 9-pin connector with the same pinouts as a Wintel computer serial port. The connector pinouts are presented in Table 19-1.

In each case, the definition of “Input” or “Output” is from the Power Controller perspective, as detailed in Table 19-1.

Table 19-1. User Serial Port Connector Pinouts

Pin	Connection Name	Value	I/O	Classification	RS-232 Connector
1	DCD (Data Carrier Detect)	± 12 Volts	Input	Dry circuit	<p>The diagram shows a standard 9-pin DB9 connector. The pins are arranged in a 3x3 grid. Pin 1 is at the top-left, Pin 2 is at the top-middle, Pin 3 is at the top-right, Pin 4 is at the middle-left, Pin 5 is at the center (ground), Pin 6 is at the middle-right, Pin 7 is at the bottom-left, Pin 8 is at the bottom-middle, and Pin 9 is at the bottom-right. Arrows point from the labels 'Pin 1', 'Pin 5', 'Pin 6', and 'Pin 9' to their respective positions in the diagram.</p>
2	RxD (Received Data)	± 12 Volts	Input	Dry circuit	
3	TxD (Transmitted Data)	± 12 Volts	Output	Dry circuit	
4	DTR (Data Terminal Ready)	± 12 Volts	Output	Dry circuit	
5	GND (Signal Ground)	Ground (0 Volts)	N/A	Power	
6	DSR (DSE Ready)	± 12 Volts	Output	Dry circuit	
7	RTS (Request to Send)	± 12 Volts	Output	Dry circuit	
8	CTS (Clear to Send)	± 12 Volts	Input	Dry circuit	
9	RI (Ring Indicator)	± 12 Volts	Input	Dry circuit	

PC (or PLC) to MicroTurbine connection requires a “null modem” or cross-connection of RS-232 control signals. Null modem connections (PC to MicroTurbine) are shown in Figure 19-1.

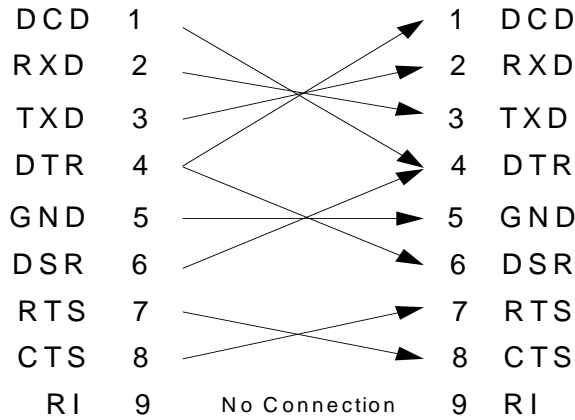


Figure 19-1. Null Modem Connections

Maintenance Serial Port Connector Pinouts

The maintenance port is a standard DB25 type connector. The connector pinouts are presented in Table 19-2.

In each case, the definition of “Input” or “Output” is from the Power Controller perspective, as detailed in Table 19-2.

Table 19-2. Maintenance Serial Port Connector Pinouts

Pin	Connection Name	Value	I/O	Classification
2	TxD (Transmitted Data)	± 12 Volts	Output	Dry circuit
3	RxD (Received Data)	± 12 Volts	Input	Dry circuit
4	RTS (Request to Send)	± 12 Volts	Output	Dry circuit
5	CTS (Clear to Send)	± 12 Volts	Input	Power
6	DSR (Data Set Ready)	± 12 Volts	Output	Dry circuit
7	GND (Signal Ground)	Ground (0 Volts)	N/A	Dry circuit
8	DCD (Data Carrier Detect)	± 12 Volts	Input	Dry circuit
20	DTR (Data Terminal Ready)	± 12 Volts	Output	Dry circuit
22	RI (Ring Indicator)	± 12 Volts	Input	Dry circuit