

# 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 20: TCP/IP Interface

This chapter presents TCP/IP interface information.

The Capstone Protocol Converter (CPC-100) provides the ability to use the standard Capstone MicroTurbine commands over a TCP/IP network connection, or over a local or wide area network. See Figure 20-1.



Figure 20-1. Capstone Protocol Converter

### Protocol Converter Overview

With the CPC-100, multiple users may connect to the same MicroTurbine simultaneously, at different password levels. All control, monitoring, and maintenance functions, including software upload, may be accomplished over the network.

The CPC Lock Switch, located on the Communication Settings Panel, allows blocking another user from communication with the MicroTurbine (or CPC).

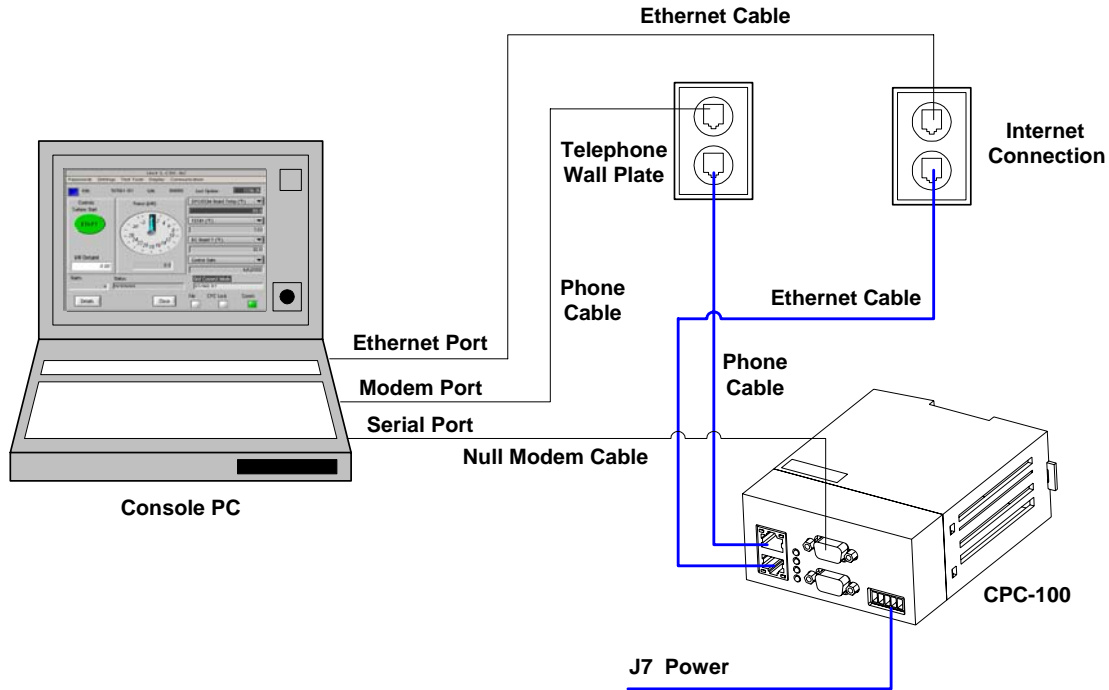
After shutting down the communication or exiting CRMS program, the CPC will be automatically placed in the unlock condition.

The maximum data-transfer rate for the CPC is determined by the maximum data-transfer speed through the MicroTurbine serial port. Eight LED indicators are provided to indicate connection and operation status.

In addition to the network connection, the Capstone Protocol Converter allows interface communication with the MicroTurbine or CPS PowerServer over the built-in CPC modem. See Figure 20-2.

The CPC-100 connects to either the maintenance or user port through regular serial communication cable to the CPC-100 port marked TERMINAL. The CPC-100 port marked ETHERNET should be connected to the local network.

Contact Capstone Technical Support for additional details regarding your CPC.



**Figure 20-2. Remote Connection through Ethernet Network**

Ports, and connector pinouts for Ethernet (10/100 Base-T), Phone (modem option), and RS-232 (MicroTurbine) connections are presented in Tables 20-1, 20-2, and 20-3.

### CPC-100 Connection Ports

Communication port details are provided in Table 20-1.

**Table 20-1. CPC-100 Communication Port Details**

Port	Connector Type	Description
TERMINAL	RS-232 (DB9 Male)	Local Serial Communication
MICROTURBINE	RS-232 (DB9 Female)	MicroTurbine Serial Communication
PHONE	RJ-45	Telephone Connection (Used with Modem Option)
ETHERNET	RJ-45	TCP/IP, 10/100 Base-T
Terminal Strip	5-pin Connector	RS-485 and Power Connections

## RS-232 Connector Pinouts

The serial port connectors are DB-9 style, and are identified as TERMINAL and MICROTURBINE.

Connector pinout details are provided in the Table 20-2.

**Table 20-2. RS-232 Connector Pinouts**

Pin #	Terminal (DB9 Male)	MicroTurbine (DB9 Female)	Connector Designation
1	DCD (Data Carrier Detect)	DCD (Data Carrier Detect)	
2	RXD (Receive Data)	TXD (Transmit Data)	
3	TXD (Transmit Data)	RXD (Receive Data)	
4	DTR (Data Terminal Ready) Not Used	DSR (Data Set Ready) Not Used	
5	Signal Ground	Signal Ground	
6	DSR (Data Set Ready) Not Used	DTR (Data Terminal Ready) Not Used	
7	RTS (Request To Send)	CTS (Clear To Send)	
8	CTS (Clear To Send)	RTS (Request To Send)	
9	RI (Ring Indicator)	RI (Ring Indicator)	

## RJ-45 Connector Pinouts

RJ-45 connectors are identified as Phone and Ethernet.

The individual connector pinout details are provided in Table 20-3.

**Table 20-3. RJ-45 Connector Pinouts**

Pin #	Phone (Modem Option)	Ethernet (10/100 Base-T)	Connector Designation
1	Not Used	TXD (+)	
2	Not Used	TXD (-)	
3	Not Used	RXD (+)	
4	Ring	Not Used	
5	Tip	Not Used	
6	Not Used	RXD (-)	
7	Not Used	Not Used	
8	Not Used	Not Used	ETHERNET

## Notes and Related Information