

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 17: Command Line Control

This chapter describes the steps required to set the command line controls.

The operator may control the MicroTurbine and retrieve MicroTurbine data by sending individual commands from the Command Line Panel.

A different level of access is required for different command and control operations. When CRMS is initially connected to the MicroTurbine, through any of the serial ports, the MicroTurbine Control Panel does not have control. The operator can only view the relevant information.

Once the operator has entered the protected level password, the operator will have the ability to change control settings. After a period of inactivity, the user and maintenance serial ports revert to their unprotected state.

The Power Controller provides various prompts based upon the access level and the communication port as summarized in Table 17-1.

Table 17-1. Maintenance and User Prompts

Prompt	Description
USR>	User port, no password required, data acquisition only
USRPT>	User port, protected level password required, data acquisition and limited control
MNT>	Maintenance port, lowest level, data acquisition only
MNTPRT>	Maintenance port, protected level password required, data acquisition and limited control
CPC>	Communication through CPC, no password required, data acquisition only
CPCPT>	Communication through CPC, protected level password required, data acquisition and limited control

Command Structure

The communications interface is a query-response from a prompt message, with the external device providing the query to the MicroTurbine Controller.

Each query is in the form of a message. A typical message contains a command, an

optional turbine identification number, and command arguments.

Arguments provide additional information to process the command.

The command syntax provides for multiple units operating as a single package.

The command structure is as follows:

```
<cmd> [, <turb#>] [= <args>]
```

where,

<cmd>	6 ASCII characters identifying function to execute
<turb#>	turbine number (use 0 for now)
<args>	sequence of ASCII text supplied to the <cmd>.

For example, in order to command 30 KW (30,000 Watts), the following command is issued:

PWRDMD = 30000

And, the response string is as follows:

PWRDMD,0=3.0000e+04

Notice that all non-printing characters, including carriage return, line feed, space and tab characters, are ignored by the Power Controller.

Contact Capstone Technical Support for information regarding the Capstone RS-232 Query Protocol.

Control Line Command Panel

Control commands can be monitored and issued from the Control Line Command panel. See Figure 17-1.

To display the Control Line Command panel, select the following:

[Communication][Command Line]
from the MicroTurbine Menu Bar.

Be sure to contact Capstone Technical Support prior to issuing Control Line commands. A qualified Service Representative will provide you with any assistance you may require.

□ Controller Response

The controller response area on the Control Line Command panel displays the commands sent to and responses from the MicroTurbine. When communicating to the MicroTurbine real-time, the ALLDAT command is sent by CRMS, and the response string is displayed.

□ Send Message

To send a command to the MicroTurbine Controller, enter the command in the **Send Message** field. The response will be displayed in the command response window. All operator commands are saved and can be resent by selecting them from the pull-down menu located on the right-hand side of the **Send Message** field.

By placing the cursor inside the **Send Message** field and pressing the left arrow key, the operator can display the previously sent commands, starting from the most recently sent. Pressing the right arrow key will display commands in opposite direction towards the last sent command. By pressing the Enter key, the displayed command will be sent. The operator can clear all operator-sent commands by selecting Clear List control from the pull-down menu.

□ Clear Display

To clear the controller response window, select the **Clear** button.

□ Record Comm to File

To record communication data to a file. This item is available for Depot version only.

□ Test Port

To test communication, select the **Test** button. If connected and communicating, the controller will respond with a prompt.

□ Acquire Real-time Data

This switch turns ON and OFF Real-time Data Acquisition (**ALLDAT**) command to observe manual commands.

❑ Comm Error LED

This LED will turn red when there are errors in the communication with the MicroTurbine Controller while **ALLDAT** commands are being sent.

Real Time Data Acquisition

Real-time data acquisition is accomplished by sending an **ALLDAT** or "all data" command. The response from the MicroTurbine Controller is parsed, scaled, and presented in the MicroTurbine Data 1 and MicroTurbine Data 2 panels.

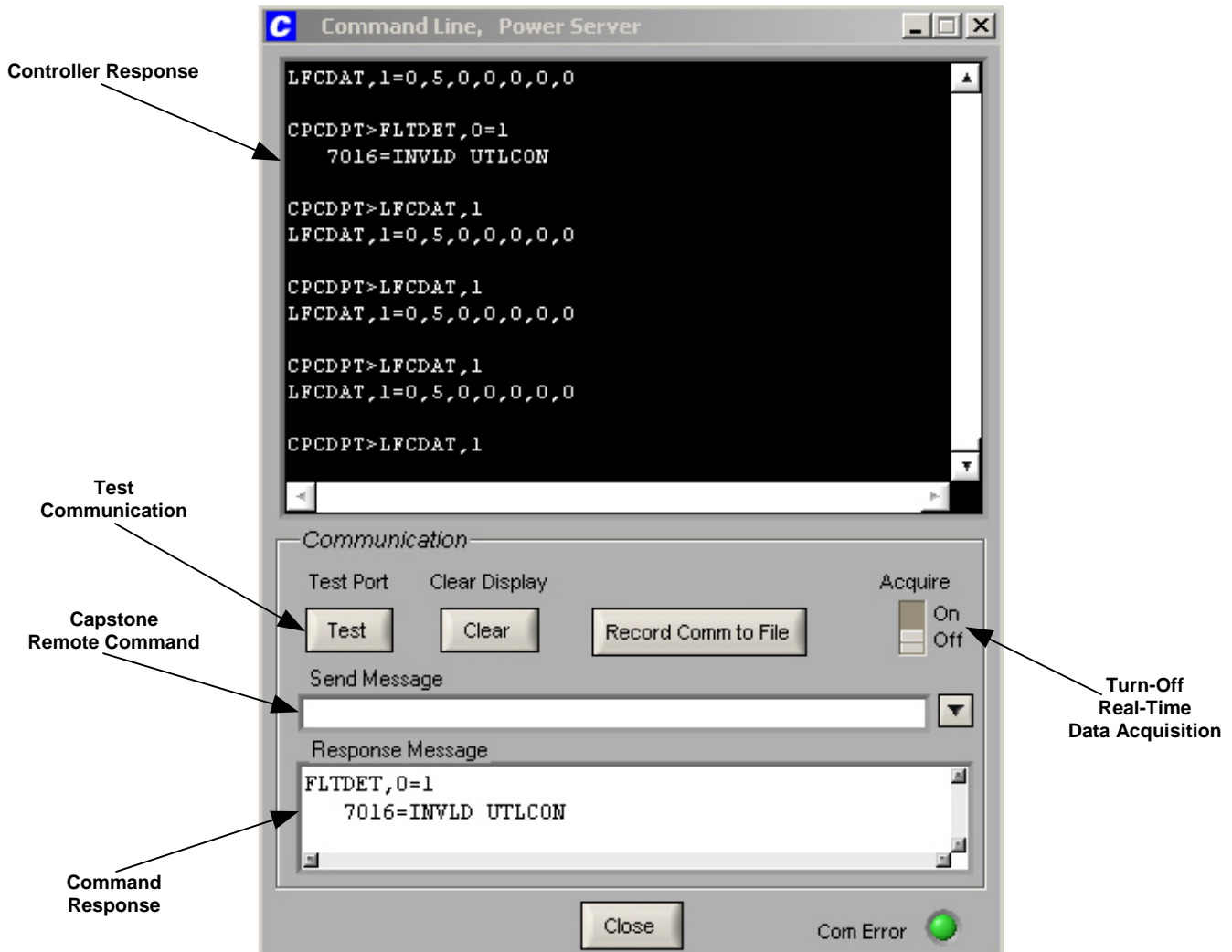


Figure 17-1. Control Line Command Panel

Notes and Related Information