

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 15: File Management

This chapter presents the File Management functions.

Data Recording

The CRMS program allows for separate recording of data from any MicroTurbine or MultiPac Controller.

MicroTurbine data is logged to a file in real-time. Information is stored in comma-separated-value format organized in files based on the MicroTurbine designation, data acquisition type, date, and time.

The File Record Status LED is displayed in the lower right-hand corner of the MicroTurbine Control Panel. It indicates whether or not the MicroTurbine is currently saving data. If the LED turns green, then the data is being saved. If the LED turns gray, then the MicroTurbine data is not being saved.

Specifying Record Parameters

Before proceeding with saving the data, the user should select the recorded parameters.

A list of available parameters is displayed on MicroTurbine Data 1, MicroTurbine Data 2, and DAQ Data Windows. See Figure 15-1.

Engine Variables			
No	Parameter (Units)	Value	Record
1	Control Date	1/19/1999	ON
2	Control Time	11:11:34	ON
3	Engine Speed (rpm)	0	ON

Labels in the image: 'Real-time Value' points to the Value column; 'Parameter Number' points to the No column; 'Description' points to the Parameter (Units) column; 'Record to File (ON / OFF)' points to the Record column.

Figure 15-1. MicroTurbine Data Panel and Settings

To view the MicroTurbine Data parameters select **[Window][MicroTurbine Data]** from the Window Menu Bar.

The recorded parameter can be selected from these windows by clicking on the parameter **Record** switch. The recorded parameter should be selected for each MicroTurbine or MultiPac Controller.

There will be no data saving if no parameters have been selected from the corresponding MicroTurbine Data Window.

File Manager Settings

To open the File Manager panel, click on the File Status LED, located on the MicroTurbine Control Panel, or select the File Manager icon from the Window Menu Toolbar. See Figure 15-2.

The user can save data automatically. When auto-recording is selected, the file manager automatically records data when the engine speed is equal to or exceeds the set value.

The following settings are available:

Data Records Selection

- **Select Turbine**

Select MicroTurbine and the box with the data-type records you would like to save.

Data Recording

- **Data Recording (Auto versus Manual)**

If **Manual** is selected, the **Start Recording** button must be turned on to begin recording data to file.

If **Auto** is selected, the data will only be recorded when the **Engine speed >= to** the specified value. This prevents data from being recorded when the engine is shutdown.

❑ **Creating Files**

- **Create New File**

Select the time interval: Daily or Hourly, and the new file will be created.

- **File Length (hrs)**

Specifies the length of time before a new file is generated. This is valid only for **Hourly** selection.

- **Create New File Now**

By clicking this button, the data for the selected MicroTurbine will be immediately saved in a newly created file.

❑ **Disc Status**

- **Monitor Disk Status**

Allows for monitoring of the disk space being utilized by current data recording activity

- **Min Disk KB Warning**

Warns user about exceeding the minimum of the available disk memory

❑ **File Location**

- **Default Directory**

Specify the default directory into which the file will be saved. The specified directory will also be the default directory for Fault traces, Log files, and Incident files.

The specified directory should not include any special characters within the directory name.

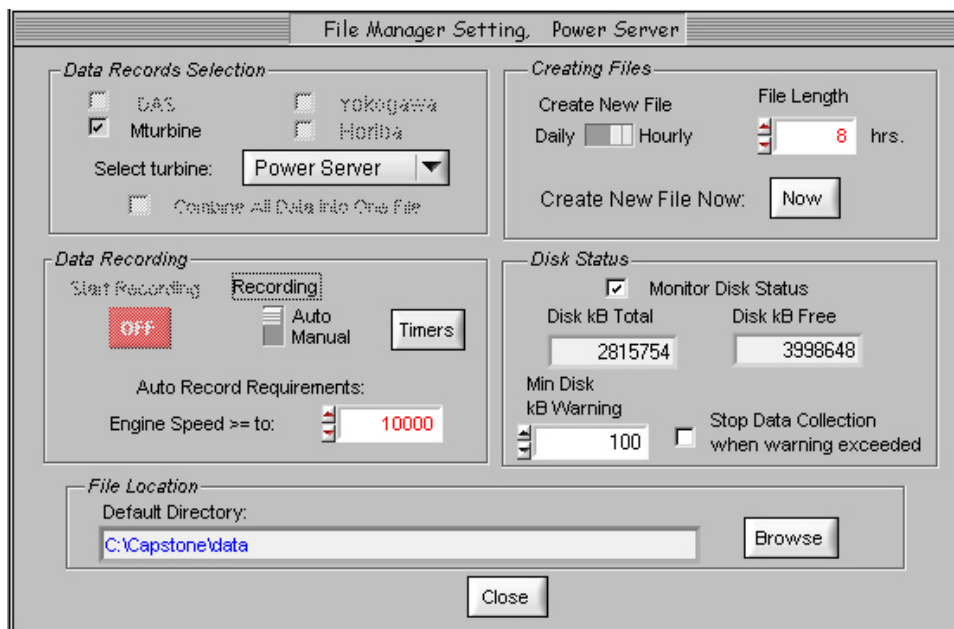


Figure 15-2. File Management Panel

Specifying Record Timing Rate

The Record Timing Rate may be defined via the Timers panel. To specify the record timing rate, select **[View][Timers]** from the

Window Menu Bar, or click on the Timers icon from the Window Menu Toolbar. See Figure 15-3.

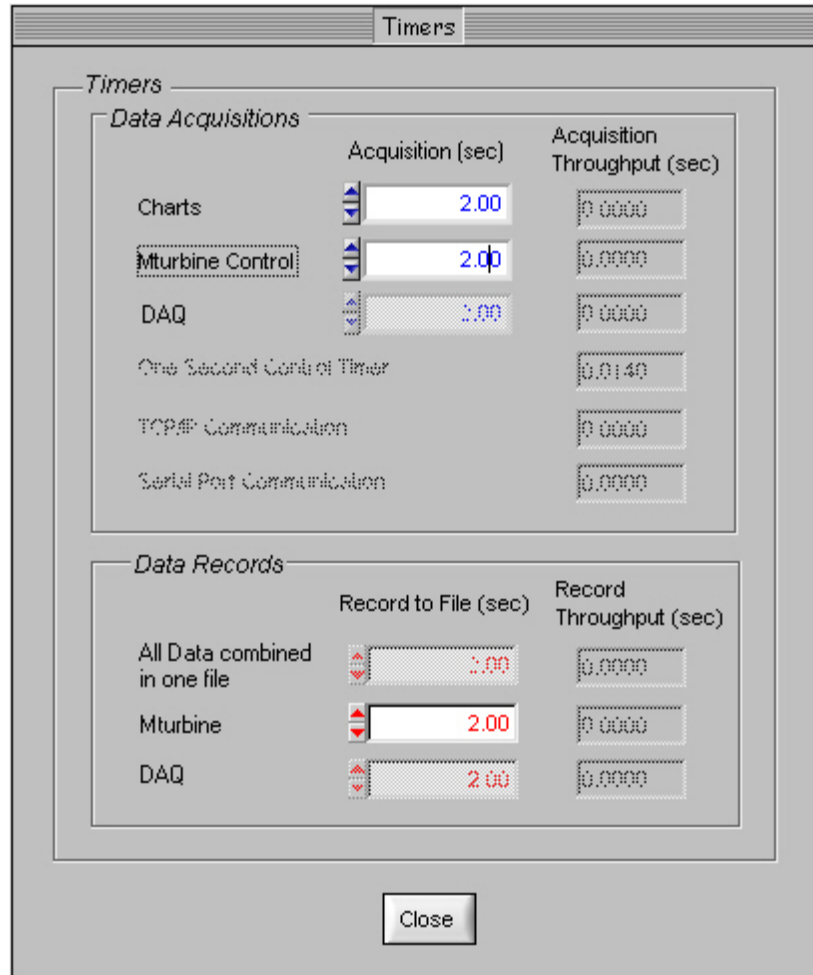


Figure 15-3. Timers Panel

It is suggested that the recorded timing rate be the same (or greater) of the MicroTurbine Data Acquisition rate. In this case, there will be no repetitive saving of the same data.

The MicroTurbine Data Acquisition rate cannot be faster than the accumulated time used for sending commands and for receiving the command response.

For MultiPac Systems, the MicroTurbine data for each Turbine is acquired sequentially, one after the other. For this reason, the accumulated acquisition rate for acquiring MultiPac data will depend mostly on the number of MultiPac MicroTurbines.

$$T_{\text{MultiPac}} = T_{\text{Acquire}} \times N_{\text{Turbine}}$$

Where:

T_{MultiPac} equals MultiPac Acquisition Rate

T_{Acquire} equals Data Acquisition Rate

N_{Turbine} equals No. Of MultiPac Turbines

The recording timing rate for the MultiPac System should be set corresponding to the MultiPac Acquisition Data rate.

Data Path

Data files are stored in the `\data` directory, found under the installation directory. There is a separate directory for each MicroTurbine site:

C:\pathname\data\site id

Where **pathname** is the user-selected installation directory.

Each data file is time and date stamped when created. See Figure 15-4.

The form of the filename is as follows:

Yyyymmddhhmmsst.csv

For example, if the file is created on 9 May 1999 at 2:34:45 pm, the resultant file name is as follows:

19990509143445t.csv

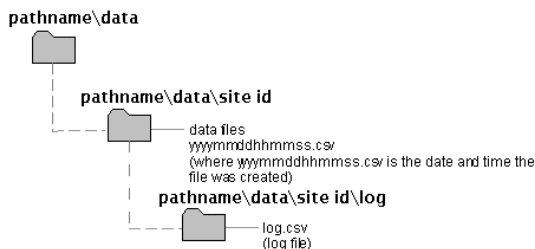


Figure 15-4. Data File Paths

Note: The control date and time (from the MicroTurbine Controller) may not match with your computer's date and time. Thus, you may notice a difference between the time and date filename and the Control Time and Date recorded in the file.

Log Files

An event of any change in operational states, including starts, stops, and faults is logged as a record to a file. See Figure 15-5.

This information is written to a comma-separated text file (log.csv). The event log records the following items:

- **Time/Date**
- **Operational State**
- **Hours**
- **kWH**
- **Current Fault Code**

To view the log file, select **[Display] Log** from the MicroTurbine menu bar.

The log data is stored in the data directory, found under the installation directory.

There is a separate directory for each site. The log file is automatically created after the first event occurs, and can be found at:

c:\pathname\data\site id\log\log.csv

Where the **pathname** is the operator-selected installation directory.

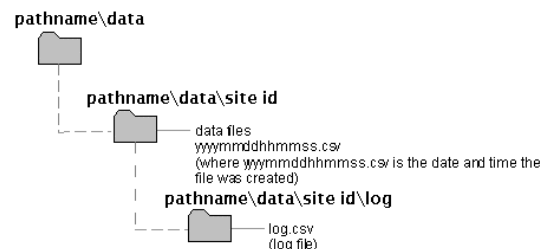


Figure 15-5. Log Files