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 6: MicroTurbine Control Panel

This chapter presents the MicroTurbine Control Panel information.

The MicroTurbine Control Panel allows various operations, including: start/stop, set power, and communications, plus it allows the setting of different modes of operation.

The MicroTurbine Control Panel also allows the display and monitoring of individual parameters. Other associated panels can be opened from the MicroTurbine Control Panel menu bar. All panels (opened from the Micro Turbine Control Panel menu bar) will display corresponding to the MicroTurbine Control Panel site name.

All control panels are moveable on the desktop and are scaleable.

MicroTurbine Control Panel

The following controls and indicators are displayed on the MicroTurbine Control panel See Figure 6-1.

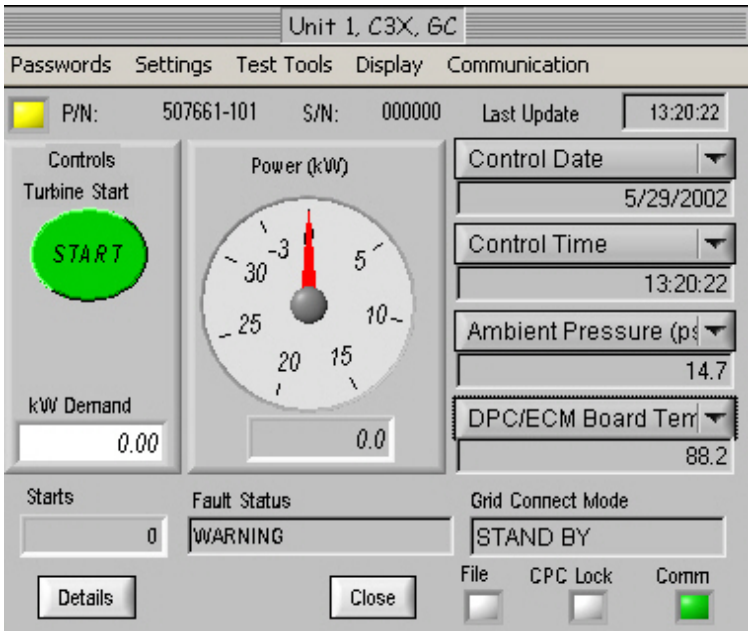

Figure 6-1. MicroTurbine Control Panel

❑ MicroTurbine Control Panel Controls

- **MicroTurbine Start/Stop**

To start the MicroTurbine, select the **START** button from the MicroTurbine Control Panel. The **START** button will now indicate **STOP**. To stop the MicroTurbine, press the **STOP** button.

- **MicroTurbine Power Demand**

To adjust the power demand after the MicroTurbine is in the **LOAD** State as displayed on the MicroTurbine **State** indicator, enter the new power demand in the KW Demand field, and then press the **ENTER** key.

- **Disable Recharge**

Disables the recharge state and enters the cool down state when selected. This control is viewable only in the Stand Alone mode while the MicroTurbine is in the recharge state.

- **Power Enable/Disable**

This control is viewable only in the Stand Alone mode while the MicroTurbine is in the recharge state. To enable the Stand Alone **LOAD** State, select the **ENABLE** button. The **ENABLE** button will now indicate **DISABLE**. To disable the Stand Alone **LOAD** State, select the **DISABLE** button.

❑ MicroTurbine Control Panel Indicators

- **Last (CRMS) Update Indicator**

The Last (CRMS) Update is displayed as the time based on the MicroTurbine Controller's real-time clock, not the computer time clock.

If the MicroTurbine is disconnected from the CRMS software, the last CRMS update time will be displayed.

- **Starts Indicator**

This field is located in the lower right-hand corner, and displays the total number of MicroTurbine Starts.

- **Fault Status Indicator**

Indicates the current Fault Condition of the MicroTurbine (Refer to your MicroTurbine Troubleshooting Guide).

- **State Indicator**

Displays the current operational control state of the MicroTurbine. Refer to Table 6-1.

Table 6-1. Operational States

Control State	Description
Not Connected	MicroTurbine not connected to computer
STANDBY	MicroTurbine Ready to Start
PREPARE TO START	Start command received, preparing to Start
LIFT OFF	Engine rotation started
PREPARE TO LIGHT	Preparing to light-off
START ACCEL	Light off, accelerating to idle
RUN	Idle. Awaiting load state
LOAD	Load
RECHARGE	Stand Alone operation only. Recharge battery
COOLDOWN	Stop command issued, engine cool down
WARMDOWN	Grid not available for cool down, engine warm down
RESTART	Engine in cool down, start command issued, engine restarting
SHUTDOWN	Engine cool down complete, engine shutdown (not rotating)
FAULT	Shutdown fault present
DISABLE	Controller disabled. Not connected to engine
BAD CONFIG	Incorrect or undefined configuration mode
DOWNLOAD	Software downloading
IDLE RECHARGE	Recharge battery while system is idle. Grid Connect mode
BURNIN	Special mode Applicable only for Burn-in Test
PROTECTIVE RELAY TEST	Conducting protective relay test
PROTECTIVE RELAY FAULT	Protective relay fault present
PREPARE TO PRIME	Prepare liquid fuel controller to prime
LF PRIME	Conducting the priming operation (Liquid Fuel Only)
LF DRAIN	Conducting drain operation (Liquid Fuel Only)
CHP SELF TEST	Cycles linear actuator through full range of motion

In the event of a loss of communications, the red-colored *LOST CONNECTION* message will stay posted on the **Fault Status Indicator** along with the last state at which communication was lost.

- **CPC Lock LED**

The CPC Lock LED is located in the lower right-hand corner of the MicroTurbine Control Panel, and indicates if communication with the CPC is locked. Locked communication means that there are no other users communicating to the MicroTurbine through the CPC.

- **Power Output Dial**

The Power Output Dial will indicate the actual power output that the MicroTurbine is instantly producing.

- **File Record LED**

The File Record LED is located in the lower right-hand corner of the MicroTurbine Panel, and indicates if the MicroTurbine data is currently being saved. If the File Record LED turns green, it indicates the data is being saved. If the File Record LED turns gray, it indicates there is no MicroTurbine data being saved at the present time.

- **Comm Status LED**

Indicates if communication is currently established with the MicroTurbine. If the Comm Status LED turns green, it indicates that CRMS is connected to the MicroTurbine. If the Comm Status turns gray, it indicates that there is no connection to the MicroTurbine. If the Comm Status turns red, it indicates that current communication with the MicroTurbine has been lost.

- **Parameter 1 through Parameter 4**

Displays user selectable parameters. Select the parameter from the parameter pull-down menu indicator. The parameter value will be displayed on the digital indicator.

- **MicroTurbine Fault Status**

The MicroTurbine fault status light or LED, located in the upper left-hand corner, provides the operator with immediate feedback on the operation of the unit with details noted in Table 6-2.

Table 6-2. MicroTurbine Fault Status

Status or Color	Description
Gray	Not connected (not communicating to MicroTurbine Controller)
Green	No faults present
Yellow	Non-shutdown fault warning
Red	Shutdown fault, engine in cool down or recharge (Stand Alone mode only). Can be restarted.
Flashing Red	Shutdown fault, no restart possible without cycling power to the power controller

Notes and Related Information