



## DCIM Cabinet Control Module

### Product Description

Concurrent Real-Time’s Cabinet Control Module (CCM) provides a fully customizable solution for Data Center Infrastructure Management. The CCM offers a comprehensive set of cabinet-level control, monitoring and security features needed in data centers, laboratories and other user environments.

#### Data Center Infrastructure Management

Data Center Infrastructure Management (DCIM) is an industry term that encompasses power, environment, asset tracking, video surveillance and site accessibility. Implementations range from a single cabinet to the management of multiple data centers around the world from a single control center. Monitoring of power and cooling values at the site and cabinet level allows for data center capacity management as well as performance optimization. Current and historical data is used for efficient facility resource management and security.



Figure 1. Cabinet Control Module display

Available DCIM hardware includes sensors that measure temperature and humidity at various points within the cabinets and facility; power at the facility, cabinet and individual server level; cooling performance via fan speed and airflow sensors; facility and cabinet door position; fire, smoke and

moisture. Control hardware can adjust facility HVAC performance, lighting and cabinet fan speed; enable cabinet and individual server power; and provide personnel access to site and individual cabinets. DCIM software interacts with the hardware, sets and detects parameter limits and responds to violations and alarms. Software products also include data recording and report features.

### **Cabinet Control Module Features**

The Concurrent CCM is a 1U enclosure powered by an embedded mini-ITX main board with an Intel J1900 processor. The CCM can be customized to meet the individual DCIM requirements of any application environment. A CCM can be installed in standard Concurrent iHawk cabinets or in customer-provided cabinets. The CCM runs an imbedded version of Concurrent's Red Hawk Linux real-time operating system.

An intelligent fan control board resides within CCM and interacts with the processor to provide access to fan status, speed and two temperature sensors. Power and tachometer signals for the four cabinet exhaust fans are interfaced through a 25-pin D-Sub connector allowing the cabinet's exhaust fan bay to be directly controlled by the CCM. By default, fan speed is regulated by cabinet exhaust temperature. Auto fan speed can be overridden with a fixed value if desired. Electronic door locks are also actuated and monitored through the CCM.

Provisions for two 12VDC power inputs are included and combined for power redundancy. This design allows for the processor and cabinet fans to operate if one of two possible AC sources is disabled. One or two 12V DC modular power supplies are included, depending on configuration.

The majority of the monitoring functions pass through the 0U 24-outlet intelligent PDU. The CCM accesses several temperature, humidity and airflow sensors connected to the PDU's sensor port. Current, voltage and power values of the individual outlets are monitored and individual outlet AC power is controllable. All control and monitoring of the PDU assets is through a Management Information Base (MIB) using a dedicated Ethernet port and SNMP.

Several times a second, the CCM scans the PDU's MIB, the fan controller and door lock status and accumulates this data into a cabinet MIB. Alarm signals from the PDU will also be passed to the controller's MIB. The CCM's MIB is designed to be accessed by the facility DCIM system and any alarms will be forwarded to the facility DCIM system. The PDU to DCIM controller Ethernet link is on a dedicated internal network and the PDU is not directly accessible from the datacenter.

### **Touchscreen Display**

A 7" touchscreen on the front door of the cabinet displays key status information and allows control of key cabinet functions via a GUI. The video interface to the CCM is HDMI and the USB interface provides touchscreen power and pointer position. The touchscreen has two modes - Default and Status.

Default mode displays a keypad on first touch and requires a passcode to view or control any features, including release of the door locks. A timeout will force the use of the keypad passcode after a period of inactivity.

Status mode shows the various cabinet environmental and power parameter menus on first touch. A login button brings up the login keypad. Control or modification of the parameters cannot be performed without a successful login. When idle, the screen displays a moving logo to enhance screen life.. A two step Emergency Power Off (EPO) may be performed without login. This allows for an EPO to be executed without first opening the front door to access the EPO button. The CCM also contains manual switches to control AC power input to the cabinet. Provisions for up to four PDUs are supported. An EPO button can also be included.

### **Enhanced Access Control**

A provision for badge reader keypad access to the cabinet is available. If the badge reader is incorporated on the front door of the cabinet, it is connected directly to the facility security system through the rear interface terminal. When a valid badge/keypad entry is detected, the facility security system sends a signal to the CCM and the cabinet doors are unlocked for five seconds. The CCM logs the keypad entry time and date.

When a door unlock command is performed, front and rear doors will unlock and will remain unlocked as long as one door is open. When both doors are closed, both will automatically lock in five seconds. Sensors are installed to detect the status of each door and side panel. An alarm is generated and logged if a door or side panel is open. Unique door keying options are available.

A method to uniquely identify a cabinet on the network is provided as there may be several CCMs at a given site. All functions are available with the HTML option allowing support for remote operation and/or wireless handheld devices to access cabinet functions. Additionally, support for asset tracking devices is available as an option.

### **About Concurrent Real-Time**

Concurrent Real-Time is the industry's foremost provider of high-performance real-time computer systems, solutions and software for commercial and government markets. Its real-time Linux solutions deliver hard real-time performance in support of the world's most sophisticated hardware in-the-loop and man-in-the-loop simulation, high-speed data acquisition, process control and low-latency transaction processing applications. With over 50 years of experience in real-time solutions, Concurrent provides sales and support from offices throughout North America, Europe and Asia. Visit [www.concurrent-rt.com](http://www.concurrent-rt.com) or email [info@concurrent-rt.com](mailto:info@concurrent-rt.com) for further information.



**Figure 2. Rack with Cabinet Control Module**