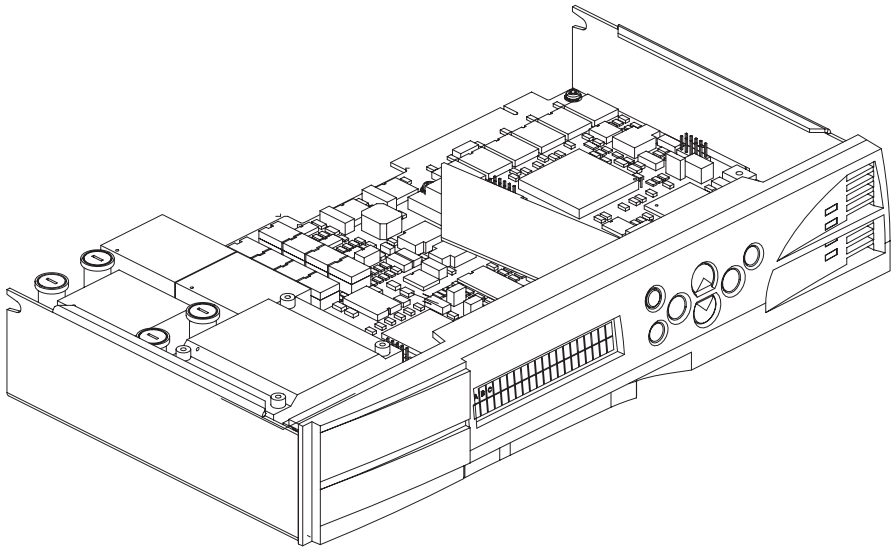
# ETC

# CEM+ Control Module

## Sensor®+ Series



## GENERAL INFORMATION

**The Sensor+ Control Electronics Module (CEM+) receives and manages Ethernet control signals as well as two DMX512 inputs. It controls dimmer output, and communicates feedback information to compatible lighting control devices and network peripherals.**

**APPLICATIONS**
- Professional and educational theatre
- Production studios
- Performance halls
- Retail and dining
- Houses of worship
- High density architectural dimming
- Touring and Portable dimming

**FEATURES**
- Direct Ethernet connectivity for dimmer levels, feedback and system control
- Two DMX512 input connections
- Rugged industrial construction
- Modular design
- Local Menu-driven User Interface
- Advanced configuration editing
- 128 Presets with programmable fade times
- System and rack feedback standard
- Support for Advanced Features (AF) dimmer-specific reporting
- Supports ETC Dimmer Doubling™
- UL and cUL LISTED and CE Marked

**ACCESSORIES**
- Sensor+ Connect – a browser-based Graphical User Interface - accessible thru an Emphasis server, computer, or a PDA on the network
- Sensor+ Preset Stations
- Retrofit kits to upgrade existing Sensor racks to CEM+ modules

## ORDERING INFORMATION

### Control Modules

| **Sensor+ Control Electronics Module** | |
|---|---|
| **Model#** | **Description** |
| CEM+ | Control Electronics Module |

### Compatible Systems

| **Sensor+ Installation Racks** | |
|---|---|
| **Model#** | **Description** |
| SR6+ | Sensor+ 6 module rack |
| SR12+ | Sensor+ 12 module rack |
| SR24+ | Sensor+ 24 module rack |
| SR48+ | Sensor+ 48 module rack |
| SR6AF+ | Sensor+ 6 module Advanced Features rack |
| SR12AF+ | Sensor+ 12 module Advanced Features rack |
| SR24AF+ | Sensor+ 24 module Advanced Features rack |
| SR48AF+ | Sensor+ 48 module Advanced Features rack |
| HSR+/HSRAF+ | Sensor+ 230V racks |
| SRAFN+ | Sensor GFCI racks |
| SRD2+ | Sensor Delta racks |
| ESRAFN+ | Sensor CE racks |
| **Sensor+ Touring Racks** | |
| **Model#** | **Description** |
| SP4820+ | Sensor+ 24 module Touring Rack (48- 20A dimmers) |
| SP7220+ | Sensor+ 36 module Touring Rack (72- 20A dimmers) |
| SP9620+ | Sensor+ 48 module Touring Rack (96- 20A dimmers) |
| **Accessories** | |
| **Model#** | **Description** |
| SBOX | Sensor+ Preset Stations |
| RK | CEM to CEM+ Retrofit kit for standard Sensor racks |
| RK-AF | CEM to CEM+ Retrofit kit for Sensor AF racks |

## SPECIFICATIONS

| | |
|---|---|
| **GENERAL** | Universal Control Electronics Module |
| | Direct Ethernet connectivity for dimmer levels, feedback and system control |
| | UL, cUL LISTED and CE Marked |
| **PHYSICAL** | Formed steel body finished with textured epoxy paint |
| | Injection molded face panel |
| | Slide-in module installs and removes without tools |
| | Spring-loaded module release |
| | Airflow sensor to ensure adequate airflow |
| **ELECTRICAL** | Accepts:<br>Single phase<br>Three phase WYE or Delta |
| | Universal Voltage range 90-250 VAC |
| | Line feed frequencies from 47-63Hz |
| | Automatic frequency variation compensation |
| **CONTROL FEATURES** | 2-line by 20-character backlit LCD for system configuration, status display and error indication |
| | Backlit 7-button keypad includes Reset button |
| | 4 status LED indicators: Power, Network activity, DMX-A and DMX-B |
| | Two configurable DMX512 inputs (2500V opto-isolated) |
| | 128 user-programmable presets assignable to 4 rooms |
| | Maximum of 1024 racks (64 groups of 16) |
| | Single Panic circuit with flexible programming |
| | Complete group configuration stored in each CEM+ |
| | Individual CEM+ failure does not disable multi-rack group |
| | Replacement CEM+ can download configuration from adjacent racks, rack back plane or online server |
| | Multi-rack configuration can be restored from a single CEM+ |
| | Dimmer outputs are regulated to maintain constant power to loads ± 1V |
| | Individual output scale voltage settings for load wiring compensation (60 – 140V) |
| | Selectable Dimmer Modes<br>Normal<br>Dimmer Doubled<br>Switched (unregulated on/off with adjustable threshold)<br>Fluorescent with adjustable threshold<br>Always On<br>Off |
| | Selectable Dimmer Output Curves<br>Linear<br>Modified Linear<br>Square<br>Modified Square<br>Sensor 2.0 |
| | 40,000-Step Resolution per half cycle |
| | Response speed <25mS |
| | Selectable Data Loss Behavior |
| **FEEDBACK** | All Sensor racks with CEM+s include basic system diagnostic reporting |
| | Remote monitoring, programming and backup functions over the network using Sensor+ Connect or WYSILink software program |
| | Standard rack feedback includes: DMX input status, Rack power status, and Rack temperature |
| | Advanced Features (AF) provides dimmer specific status and load feedback (requires AF dimmer rack and AF dimmer modules) |

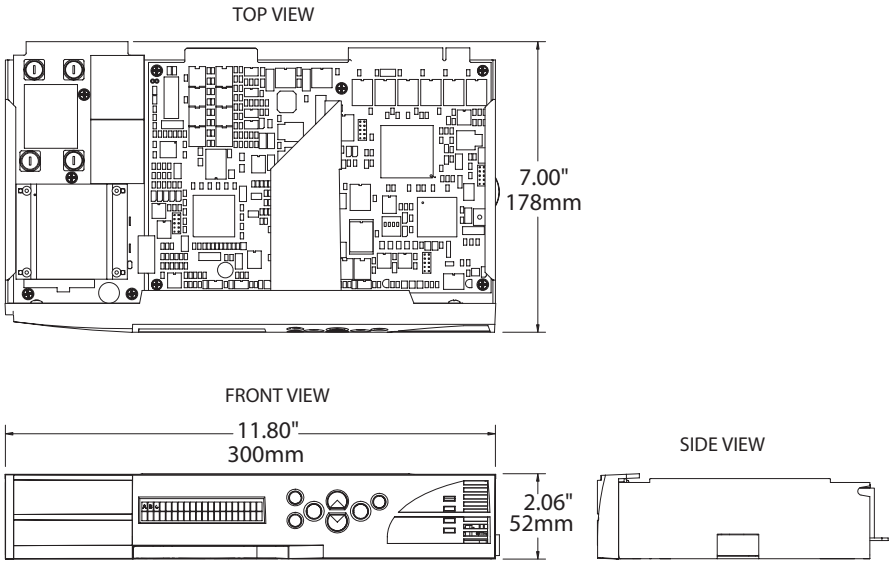
## LOCAL PROGRAMMING MENU

| | |
|---|---|
| **RACK ERRORS** | View Error messages |
| **ABOUT** | About Group: Software version, panic status, preset status, and group name |
| | About Network: IP address, SubNet mask and Gateway |
| | About Rack General: ambient temperature and airflow, rack type, and air filter status |
| | About Rack Power: frequency, voltage per phase, and voltage headroom |
| | About Rack Data: status for DMXA, DMXB, and Network activity |
| | About Rack Address: DMXA, DMXB or EDMX start address, Rack Address mode (Standard or Advanced) |
| | About Dimmer: module type, curve, scale voltage, output level, control source, and module location |
| | About Room: assign and monitor presets in a room |
| | Identify Rack: quick way to find and identify a single rack in a group |
| **LOGIN** | Security Level passwords determine screens and modes available to user |
| **PRESETS** | Play, deactivate or clear presets |
| | Record presets from DMX, EDMX and set levels |
| | Set fade times and priority levels |
| | Name presets and rooms |
| | Set maximum number of active presets per room |
| **PANIC** | Activate, deactivate or clear group-wide panic |
| | Record panic from DMX, EDMX and set levels |
| | Record panic properties: normally open or closed, maintained or momentary, master level, and option to force all non-panic dimmers to zero |
| **DIMMERS** | Set dimmers at levels and release |
| | Set dimmer curve |
| | Name the dimmer |
| **RACK SETUP** | Name rack and set type of rack |
| | Patch Capability |
| | Set first dimmer and address mode (standard or advanced) |
| | Set Temperature Alarm |
| | Set Power Balance – Column, Single Phase or Three Phase |
| | Set Air Filter Cleaning reminder based on hours of use |
| | Configure Fan as Always On or Off if no data/15 min. |
| | Select Data loss Behavior – Hold last Look, Wait and fade, Crossfade to a Preset |
| **GROUP SETUP** | Name Group |
| | Setup Group Network – IP Address, SubNet mask, Gateway Address and Enable/Disable Network |
| | Set Data Priority per DMX port |
| | Select Language – English, French, Spanish or German |
| | Select Temperature Reporting type - F° or C° |
| | Set Login Timeout |
| | Record Loads and Report Load Errors |

# CEM+ Control Module

## Sensor®+ Series

### DIMENSIONS



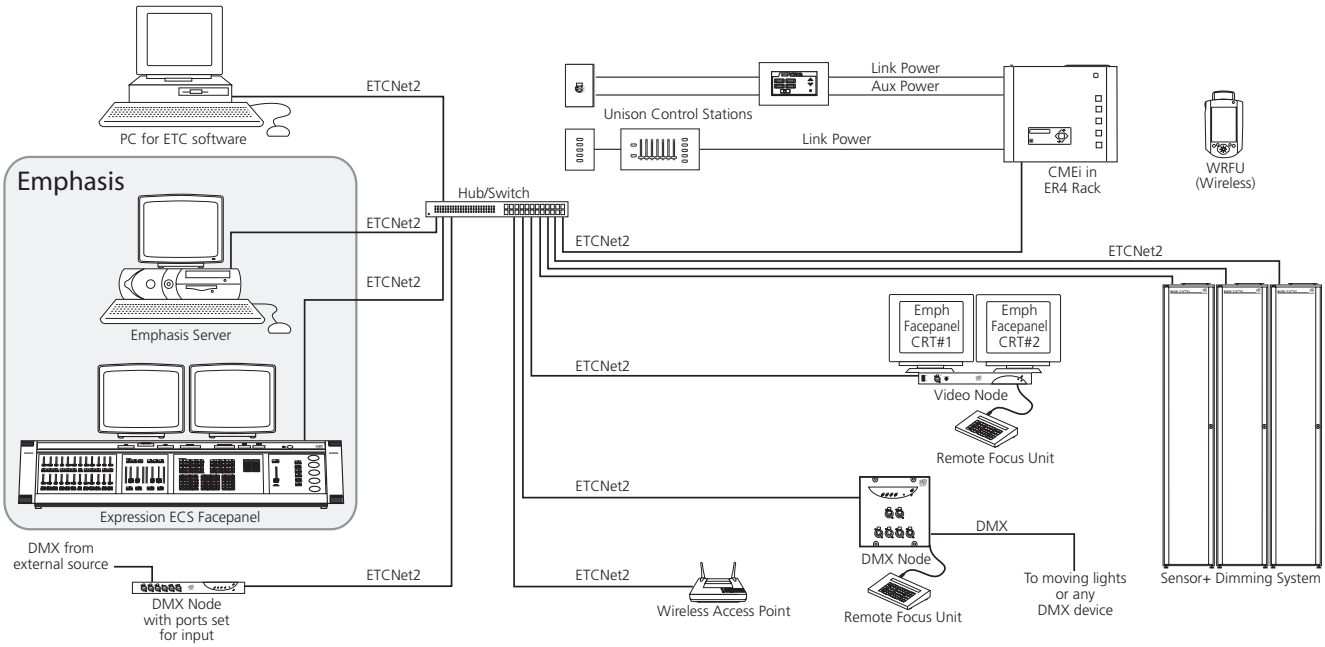

**Control Electronic Module Weight**

| Model | Weight | | Shipping Weight | |
|---|---|---|---|---|
| | lbs | kgs | lbs | kgs |
| CEM+ | 4.2 | 2 | 6.2 | 2.8 |

**Maximum BTU Production per module**

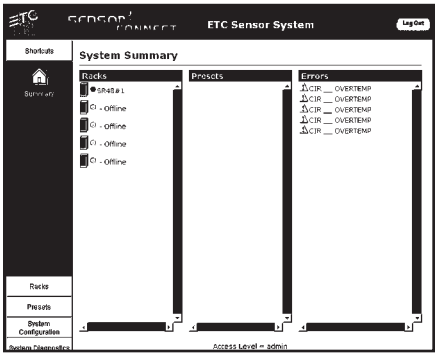
| Model | BTUs | Watts | Efficiency |
|---|---|---|---|
| ALL CEM+ | <10 | <4 | N/A |

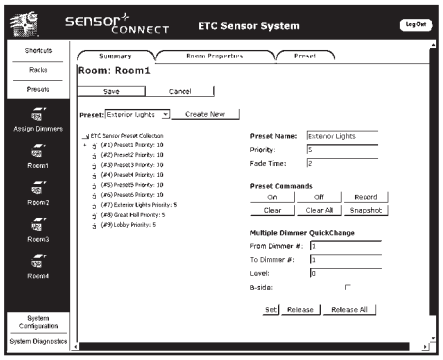
### TYPICAL NETWORK SYSTEM RISER DIAGRAM

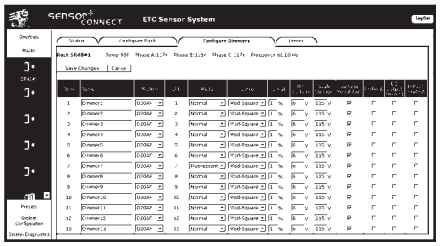


# CEM+ Control Module

## Sensor®+ Series




### SENSOR+ CONNECT

**Sensor+ Connect duplicates the functions of the Control Electronics Module (CEM+), but on your Emphasis server, computer or even your PDA. This graphical user interface (GUI) allows you to monitor rack activity, reconfigure dimmer curves, record or activate presets – plus a whole lot more.**

Offers all the features needed to create, edit and download specific information to the racks and modules.

**FEATURES**
- Configure rack and module information
- Patch/Address 2 DMX Universes
- File transfer capabilities
- Record and activate 128 preset looks
- Assign presets to up to 4 rooms

**SYSTEM REQUIREMENTS**
- Emphasis server, Computer or PDA
- Internet Browser Software such as Internet Explorer 6.0 or better
- Network connection (wired or wireless) to a Sensor System with a CEM+ module

### BROWSER NAVIGATION

**LOGIN** Security Level passwords determine screens and modes available to user

**HOME** System Summary – Rack status, Active Presets, Error List

**RACKS** Select a rack or all racks

View rack status, rack configurations, dimmer configuration and rack specific errors

Rack Configuration
- Name rack and set type of rack
- Set Address mode: standard or advanced
- Set Temperature Alarm
- Select Power Balance – Column, Single Phase or Three Phase
- Configure Fan Time mode as Always On or Off if no data/15 min.

Dimmer Search
- Search for dimmer(s) by specifying a number of search criteria – quick dimmer configuration

**DIMMER CONFIGURATION**
- Set dimmer name and module type
- Set dimmer mode: Normal, Dimmer Doubled Switched, Fluorescent, Always On, Off
- Set dimmer curve: Linear, Modified Linear, Square, Modified Square and Sensor 2.0
- Set Scale Voltage and Threshold levels
- Select On/Off for Voltage Regulation, Preheat, DC Output Prevention, and Inrush Protection
- Set Temperature Reporting mode as F° or C°

**PRESETS**

Assign Dimmers:
- Assign dimmers to Rooms

Room 1, 2, 3 or 4:
- Play or deactivate presets
- Record presets from DMX, EDMX and Set levels
- Set fade times and priority levels
- Set Room Properties – name and maximum number of active presets

**PHYSICAL CONFIG**

Panic
- Play or deactivate group-wide panic
- Record and clear panic
- Set panic properties: normally open or closed, maintained or momentary, master level, and option to force all non-panic dimmers to zero

Patch
- Patch Configuration includes: Port Enable, DMX Loss Behavior, Dimmer Number Start, Length, Priority, Fade and Hold Time.

Network
- Setup Group Network – IP Address, Netmask, Gateway Address and Enable/Disable Network

File Transfer
- Copy configuration files to a computer (download)
- Send updated configuration files to CEM+ (upload)

Load Management
- Record Loads and Report Load Errors

**DIAGNOSTICS**

Dimmer Check
- Set a dimmer to a level, with easy dimmer advancement

Dimmer Level
- Set dimmer(s) to a specified intensity.

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