ELECTRONIC THEATRE CONTROLS

Control Electronics Module

Advanced Features (AF) Series

GENERAL INFORMATION

The **Sensor® Control Electronics Module (CEM)** receives and manages up to two DMX512 inputs, controls dimmer output, and communicates feedback information to compatible lighting control devices and other ETCLink peripherals.

APPLICATIONS
Professional and educational theatre
Production studios
Performance halls
Retail and dining
High density architectural dimming

FEATURES
Rugged industrial construction
Adaptable modular design
ETCLink rack status feedback
Advanced Features (AF) dimmer circuit load reporting support
Advanced configuration editing
32 Backup Looks stored in rack memory
Dual DMX512 connections
ETC Dimmer Doubling™ support
UL and cUL listed

ACCESSORIES
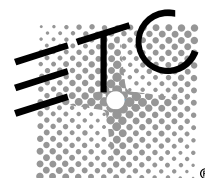Handheld Controller
Sensor Backup Stations

ORDERING INFORMATION

Control Modules

Model#	Description
Sensor Control Electronics Modules	
CEM-48	Control Electronics Module - 48 Dimmers
CEM-96	Control Electronics Module - 96 Dimmers

Compatible Systems

Model#	Description
Sensor Dimming Racks	
SR6	6 slot Installation Rack
SR12	12 slot Installation Rack
SR24	24 slot Installation Rack
SR48	48 slot Installation Rack
SR6AF	6 slot Advanced Features Installation Rack
SR12AF	12 slot Advanced Features Installation Rack
SR24AF	24 slot Advanced Features Installation Rack
SR48AF	48 slot Advanced Features Installation Rack
Sensor Portable Packs	
SP6AF	6 slot Advanced Features Portable Pack with CEM module
SP12AF	12 slot Advanced Features Portable Pack with CEM module
Sensor Touring Racks	
SP24	24 slot Touring Rack
SR36	36 slot Touring Rack
SR48	48 slot Touring Rack

SPECIFICATIONS

GENERAL
Available in 48- or 96-channel models
16 gauge steel chassis, finished with textured epoxy paint
Slide-in modules can be installed and removed without tools
UL and cUL listed

ELECTRICAL
Accepts either three phase 120/208 VAC or single phase 120/240 VAC
Voltage range 90-140 VAC
Line feed frequencies from 47-63Hz
Any phase operation

CONTROL FEATURES
Automatic frequency variation compensation
2-line by 20-character LCD window for status display and error indication
25-key control pad
3 Phase-status LED indicators
Test/electronics bypass switch sends all outputs to full and switches fan on
Dual configurable DMX512 inputs (2500V opto-isolated)
LED status beacon flashes when system detects error
Automatic frequency variation compensation
32 user-programmable backup looks (16 in systems exceeding 2,000 dimmers)
Flexible Panic circuit programming
Complete system configuration stored in each CEM
Replacement CEM can download configuration from adjacent racks
Multi-rack configuration can be restored from single CEM
Individual CEM failure does not disable multi-rack system
Dimmer outputs are regulated to maintain constant power to loads ± 1V
Individual output scale voltage settings for load cable compensation
Five selectable dimmer output curves
Update rate 40Hz
Response speed <25mS
Last output is maintained if control input fails (user-definable period)

ETCLINK NETWORK
All Sensor racks with CEMs include ETCLink and basic system diagnostic reporting
Remote monitoring, programming and backup functions via Sensor Handheld controller or any ETCLink-compatible lighting console
Performs rack-to-rack communication
Communicates system diagnostic information to consoles, PCs and other remote devices

SYSTEM FEEDBACK
Standard rack feedback includes: DMX input status, Rack on/off, Rack temperature
Advanced Features (AF) provides dimmer specific load circuit feedback data to compatable consoles and remote devices
(requires AF dimmer rack and AF dimmer modules)

PROGRAMING OPTIONS

STATUS MODE
Default LCD display shows Rack ID and error status

DIMMER MODE
Set dimmer(s) to level

BACKUP MODE
Snapshot backup looks from DMX input
Program backup looks from keypad/handheld
Activate/de-activate system-wide backup looks
Record system-wide panic circuits

ABOUT MODE
About system: panic circuits, backup looks, system name
About rack: rack voltage/frequency, start addresses, DMX port status, ambient temperature, rack type
About dimmer: dimmer rating and type, rack location, control and output levels, recorded load (AF only), current load (AF only), load change (AF only)

SETUP MODE
Dimmer firing modes: normal, switched, Dimmer Doubling™, or off
Dimmer curves:
    IES modified square law (default)
    Sensor 2.0 modified square law
    Standard square law
    Linear
    Modified linear
Dimmer scale voltages: set output scale between 60-140V
Dimmer threshold levels: set threshold levels for ballasted loads
Dimmer reporting status
Rack ETCLink address
Standard or Advanced DMX port configuration
    Standard (one start address, both ports pile-on)
    Advanced (start/end addresses and first dimmer affected per port, DMX port A/ port B/backup look prioritization)
Rack ID
Enable or disable ETCLink error messages
Enable or disable Advanced Features messages:
    Load dropped below recorded value
    Load increased over recorded value
    DC on dimmer output
    SCR failed on/off
    Circuit breaker tripped
    Dimmer module removed
    Dimmer load absent
    GFI/RCD Trip
Record loads for Advanced Features
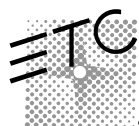
Control Electronic Module Weight

Model	Weight		Shipping Weight	
	lbs	kgs	lbs	kgs
CEM (all)	4.2	2	6.2	2.8

Maximum BTU Production per module

Model#	BTUs	Watts	Efficiency
All	<10	<4	N/A

These values should be provided to a qualified HVAC design engineer, along with dimmer quantities, types and dimmer room dimensions, to calculate dimmer room air handling requirements.

Dimmer room HVAC systems must at all times maintain the specified ambient temperature **at the dimmer rack**. Dimming systems operating within 10°F of the upper or lower temperature limits must strictly follow installation and operation guidelines to operate reliably.