I. CD80 SUPERVISOR 48 MODULE DIMMER RACK(S)

A. GENERAL

1. The dimmer racks shall be fully digital, designed specifically for entertainment lighting, and shall consist of up to 48 dimmer module spaces. Dimmer rack systems shall be UL and cUL listed.
2. Rack setup and preset data shall, as standard, be fully user programmable on a per rack or system wide basis. The dimmer rack shall report rack and dimmer status to a remote personal computer or control console and, as an option, report load status information.

B. MECHANICAL

1. The dimmer rack shall be a free standing, dead-front switchboard, substantially framed and enclosed with 16-gauge, formed steel panels. All rack components shall be properly treated, primed and finished in fine texture, scratch resistant, gray powder coat paint.
2. The dimmer rack shall not exceed 80”H x 24.5”W x 19.5”D. Racks shall be designed to allow for adjacent mounting and for bolting to the floor. The half dimmer rack version, consisting of up to 24 dimmer module spaces shall not exceed 57”H x 24.5”W x 19.5”D. Rack doors shall not increase the total rack depth by more than 1.0”, and will not increase the rack footprint.
3. The rack shall be designed to allow for easy insertion and removal of all modules without the use of tools. Dimmer supports shall be provided for precise alignment of dimmer modules into power and signal connector blocks.
4. Rack spaces shall be mechanically keyed such that modules of greater current capacity cannot be accepted for that space. Racks that allow modules of higher wattage to plug into the same space shall not be acceptable.
5. Multiple low-noise fans shall be provided to allow redundancy in case of fan failure. The fans shall maintain the temperature of all components at proper operating levels with dimmers at any load, providing the ambient temperature of the dimmer room does not exceed 40 degrees C and humidity of 10-90% non-condensing. Air shall flow over the surfaces of the heat generating components using a combination of convection and fan assisted air flow. Each rack shall be outfitted with a lockable door that does not impede air flow in any manner.
6. Fans shall be gradually controlled between off and full speed in order to minimize fan noise under all operating conditions. In the event of a rack over temperature condition, a warning shall be displayed on the rack or on a remote personal computer or control system. If the temperature rises 5 degrees C over the warning threshold, power to SSR control circuits will be automatically shut off.
7. Load terminations shall be clearly marked with the rack circuit number. Signal terminations shall be by plug-in screw terminals to facilitate contracting and servicing and shall be clearly labeled.

C. ELECTRICAL

1. Dimmer racks shall operate at 90 to 270VAC 3 phase, 4 wire + ground or 120 to 240VAC, 1 phase, 2 wire + ground, 47 - 63 Hz at a maximum of 800A per phase. Bussing across adjacent multiple racks shall be possible.
2. Load phase, neutral, and ground terminals shall, as standard accept up to a #6 gauge wire. An optional terminal adapter accepting up to #2 gauge wire shall be provided to minimize load voltage losses. Dimmer racks shall be braced for 50,000Amps. Provisions shall be made for optional amp trap devices to provide higher fault current protection, if required.

D. ENVIRONMENTAL

1. The maximum ambient temperature shall be 40 degrees C.
2. Racks shall be installed in adequately ventilated environments with a minimum of dust.
3. The operating environment shall have a relative humidity of 10-90%, non condensing.

E. RACK ELECTRONICS, PHYSICAL

1. The main dimmer control electronics shall be housed in one Rack Processor Module (RPM) plug in module. The dimmer control electronics shall be completely digital without employing any digital to analog demultiplexing schemes or analog ramping circuits.

2. All rack setup and preset data shall be stored in a non-volatile manner and may be transferred to a replacement Rack Processor Module without losing data.
3. Each Rack Processor Module shall have a back-lit LCD display with a six key keypad for rack setup, preset control, testing, rack status, error and diagnostics. Six LED's shall indicate mux inputs A and B OK, electronics power OK, processor OK (Built In Self Test), active processor, and dimmer module error.
4. A second optional Rack Processor Module shall provide full Redundant Tracking Backup (RTB). The Backup Processor module shall be interchangeable with the main Rack Processor Module . The Backup Processor module shall exactly track all setup, preset and other commands at all times without any operator action. The Backup Processor Module shall take over all communications and dimming control upon activation. It shall be possible to return control to the main Rack Processor Module.
5. All rack setup and preset data shall be electronically transferable between the main Rack Processor Module and the Backup Processor module in case of replacing either of the modules.
6. All rack setup and preset data shall be transferable to and from library storage on a personal computer on a per rack basis. The system shall be capable of monitoring multiple racks on a single cable connection.
7. A permanently mounted Central Interconnection Card (CIC) shall provide signal connections and security features in conjunction with optional rack mounted power supply units. The CIC shall provide the only point for contractor connection of signal cables and PANIC activation. The connections shall be made with two part plug-in screw terminals for ease of contracting.
8. All digital multiplex, RS-485 communication ports and remote contact input connections shall be optically isolated from all processor electronics by 2,500V RMS isolation.
9. The Central Interconnection Card shall have the provision to select any of a maximum of 96 dimmer and 12 analog outputs to be activated by a PANIC function. The PANIC function shall be activated or de-activated by one or more local or remote contact closures. The CIC shall provide a selection device to enable or disable the activation of PANIC when removing the RPM from an active rack. PANIC will not be automatically activated if a RPM is removed from an inactive rack. Racks that employ processor controlled PANIC functions shall not be acceptable.
10. The CIC module shall have LED's indicating:
    a. +5V for opto-isolation OK.
    b. Auxiliary power supply OK.
    c. PANIC active.
    d. Rack overheat warning.
    e. Power phases active.

F. RACK ELECTRONICS, CONTROL AND COMMUNICATIONS

1. The control electronics shall provide the following control and communication inputs as standard:
    a. Two optically isolated DMX512 control inputs. The first input can be AMX192 as an alternative to DMX512. The second input is DMX512 only. Each mux input shall have a patch to allow overlapping or separation of any mux control level.
    b. 32 (96 channel processor) or 16 (48 channel processor) analog 0 to +10V signal inputs. The analog inputs shall be fully patchable to any rack dimmer circuit or analog output.
    c. Eight optically isolated contact inputs, for external switching of functions.
    d. RS-485 optically isolated signal inputs for System Wide Control (SWC), and Outlook control system use. SWC is separate from the mux control signal, allowing sophisticated and independent remote control of circuits and presets through a hand held programmer and/or preset stations. Outlook is a control system comprised of architectural style panels for recording and playback of presets in individual assigned "rooms".
    e. One RS-232 signal input for local connection to a personal computer, providing setup, playback, library storage and reporter feature supervision.
2. The control electronics shall provide the following outputs as standard:
    a. Up to 96 phase controlled signals to control the dimmer SSRs.
    b. Twelve analog 0 to +10V signals for control of external devices, (with 96 channel processor).

G. RACK ELECTRONICS, FEATURES

1. The dimmer control electronics shall have a dimmer update rate better than 16 ms (60 Hz) or 20 ms (50 Hz). Dimmer outputs shall exhibit no oscillating or hunting for levels. Dimmers set to the same level shall output within +/-1V of each other, regardless of phase or input voltage, providing the desired level is less than the phase input voltage less the dimmer insertion voltage, the load on the dimmers is the same and line is an undistorted sine wave.
2. The dimmer output levels shall be regulated for incoming line voltage variations provided. The input power supply must provide an undistorted sine wave at all times. The regulation shall adjust for both RMS voltage and frequency changes of the incoming AC wave form. Regulation shall maintain the desired output voltage +/- 2 volts for the entire operation range (100 - 240VAC) with the exception that the maximum output will be no greater than the phase input voltage less the dimmer insertion voltage. There shall be no interaction between dimmers in the system or any other equipment. The output shall be regulated to the user programmable maximum voltage level on a dimmer-by-dimmer basis between 50V and 240V.
3. The control electronics shall allow the maximum output levels of individual dimmers to be adjusted, e.g. to compensate for load circuit voltage loss. The selected dimmer curve shall regulate so that the curve is proportional to the programmed maximum voltage. Systems with status reporting dimmers shall have full line compensation with adjustment for changes in line and load, systems without this capability shall not be accepted.
4. The RPM shall also have the capability to support dimmers of different types and sizes that may be mixed throughout the rack. Individual dimmers may be dimmed or switched (non-dim). The individual phase control or switching of positive and negative line voltage half cycles shall not be acceptable, as the net resultant DC line current may damage or degrade line supply transformers.
5. The control electronics shall contain diagnostic routines to perform a self test (Built In Self Test). Standard status reporting shall consist of:
   a. Dimmer type in slot (user programmed data).
   b. Input line voltage per phase.
   c. Mux A input fail.
   d. Mux B input fail.
   e. Dimmer output level (%).
   f. Rack overheat warning.
   g. Rack overheat shut-down.
6. Optional load status reporting shall consist of the following on a per dimmer basis:
   a. Load (Wattage).
   b. Deviation from recorded load.
   c. No load.
   d. Excess DC.
   e. Overload.
   f. SSR failure.
   g. Circuit breaker open.
   h. Dimmer fault.
7. The control electronics shall provide the following setup functions that shall be user programmable on a per rack or system wide basis:
   a. Mux A patch.
   b. Mux B patch.
   c. Analog inputs patch.
   d. Architectural patch for Outlook control systems.
   e. Set rack circuit ID.
   f. Dimmer report enable/disable.
   g. Record preset and preset crossfade time.
   h. Set SWC preset.
   i. Set SWC backup preset.
   j. Set architectural preset with Outlook control systems.
   k. Set dimmer level (%).
   l. Set dimmer max. voltage (24V - 250V in 1V steps).
   m. Set dimmer min. level (0 to 99%).

n. Set dimmer curve.
o. Set dimmer response time.
p. Set control logic.

8. The mux A and B patching shall support a rack start address and individual dimmer patch. It shall be possible to patch the analog outputs to any mux A and B address. The architectural patch shall define the rack circuit / room / room channel relationship for Outlook control systems.
9. Each individual rack circuit shall have a 5-digit alphanumeric ID (Circuit ID) that is addressable by a personal computer connection or by SWC (SWC can access the first 4 digits), enabling continuous numbering over several mux spans or enabling other user programmable groupings or labeling.
10. The control electronics shall provide a facility to disable the output of any individual dimmer by setting the level to 0. It shall also be possible to enable and disable dimmer status reporting on a per dimmer basis.
11. The control electronics shall contain 99 System Wide Control (SWC) user programmable presets and a permanent blackout preset (preset 0). It shall be possible to record individual preset crossfade times, including preset 0. The presets shall be simply user programmable as a snapshot of the current dimmer outputs resulting from all dimmer control sources according to selected control logic, on a per rack or system wide basis. Each preset may have an individual crossfade time between 0 seconds and 10 minutes.
12. The control electronics shall support a user assignable backup preset. Each rack shall, in the event of loss of mux control according to selected control logic, maintain the last levels for a user programmable period after which it shall automatically fade in the assigned backup preset. Alternatively it shall be possible to program the rack to indefinitely hold the last dimmer levels. Systems that do not offer this feature shall not be acceptable. It shall be possible to continue control without an active mux signal using any of the SWC or Outlook architectural presets as well as the analog inputs.
13. The control electronics shall provide an architectural Outlook control system preset capability of 8 presets plus full ON and OFF for each of 16 separate rooms with programmable fade times between 0 seconds and 4 minutes.
14. The control electronics shall provide the ability to set one or a group of dimmers to any level.
15. The control electronics shall provide the ability to set a library or user programmable curve to any individual dimmer. Library curves shall be:
    a. Square curve.
    b. S-curve.
    c. Linear power output curve.
16. User selectable curves shall be:
    a. Non-dim (switched) with a programmable trigger level 0 - 99%.
    b. Electronic ballast fluorescent curve with a kick-start voltage and user programmable top set and bottom cut-off point.
    c. Magnetic ballast fluorescent curve with user programmable top set and bottom cut-off point.
    d. Five user defined programmable curves.
17. Each dimmer shall have one of three user programmable response in order to optimize lamp filament life and speed of operation:
    a. Fast (30 ms).
    b. Normal (100 ms).
    c. Slow (300 ms).
18. The control electronics shall provide a number of user programmable control logic schemes, regulating the logical relationship between dimmer control sources:
    a. Mux A highest takes precedence (HTP) with mux B, plus HTP with analog inputs, plus HTP with SWC presets, plus HTP with Outlook presets.
    b. Mux A only HTP with analog inputs, plus HTP with SWC presets, plus HTP with Outlook presets.
    c. Mux B only HTP with analog inputs, plus HTP with SWC presets, plus HTP with Outlook presets.
    d. Mux A or mux B only HTP with analog inputs, plus HTP with SWC presets, plus HTP with Outlook presets (A or B mux selection via external contact closure).
    e. Mux B over mux A HTP with analog inputs, plus HTP with SWC presets, plus HTP with Outlook presets.
    f. Mux A over mux B.
    g. SWC Presets HTP with Outlook presets, HTP with analog inputs over mux A HTP with mux B (on selection of a SWC preset other than 0).

H. DIMMER PERIPHERAL EQUIPMENT

1. The dimmer system shall support the following range of specialist peripherals:
   a. Remote SWC backup preset panels.
   b. Remote SWC Stage Manager's auxiliary preset panels.
   c. Remote SWC hand held programmers.
   d. Remote personal computer for user programming, library storage of dimmer setup data and remote monitoring of dimmer and load status.
   e. Remote Outlook panels for architectural style channel and preset control of separate and independent (rooms).
2. The dimmer system shall support a remote hand held SWC Programmer unit with 40 tactile keys and a 4 line by 16 character backlit LCD offering channel control using standard control system syntax and direct action level keys, preset and preset time recording and control and riggers functions Check+, Check- and Rem Dim. The SWC programmer shall be functional with distributed dimming systems in conjunction with other SWC panels and shall not require the presence of a control system to function. Dimming systems that do not offer this facility shall not be acceptable.
3. The dimmer system shall support 8- and 16-preset SWC wall mounted panels with tactile keys and integral LED indicators per key. The panel shall control 8 or 16 consecutive presets stored in the dimmer racks following a user programmable start address. The panel shall enable the recording of presets, the playback of presets and the turning off of the active playback. It shall be possible to disable the panel recording function. It shall be possible to connect a total of 30 SWC programmers or panels on one SWC system.
4. The dimmer system shall support a range of wall mounted Outlook architectural style panels consisting of preset keys with integral LED's, channel and master faders for setting, recording and playback of architectural style presets in individual assigned zones (rooms). Additional peripherals shall consist of panels allowing the zone (room) channels and presets to be joined and un-joined, infra-red remote control for up to 8 zone (room) presets and Audio-Visual (A/V) interface units enabling 8 dimmer presets, on and off to be controlled by external contact closures

II. DIMMER MODULES

A. GENERAL

1. The dimmer modules shall be designed using advanced, state-of-the-art components specifically for entertainment lighting.

B. PHYSICAL

1. The dimmer modules shall be fully plug in and factory wired. Dimmer modules shall be of rugged and heavy duty construction enclosed by a formed aluminum chassis. Power and signal pins shall be recessed in a self aligning housing to avoid handling, storage, and insertion damage. A contoured handle shall be provided for ease of insertion and withdrawal. All chassis parts, except heat sinks and handle, shall be properly treated, primed and finished in fine texture, scratch resistant, gray powder coat paint. Each module shall be labeled with the manufacturer's name, catalog number and rating. Modules constructed of molded plastic for structural support shall not be acceptable. Dimmer modules shall be UL and cUL recognized devices.
2. Dimmer modules shall be keyed so that dimmer modules of greater capacity shall not be interchangeable.
3. Standard factory modules shall be available to provide dedicated non-dim circuits not employing SSR devices. Dual modules shall be available providing non-dim/dimmer, dimmer/non-dim and non-dim/non-dim configurations. Each non-dim shall be provided with a primary circuit breaker of the appropriate rating. Non-dims shall be designed so they can be used for inductive loads.
4. Standard factory modules shall be available to provide hard fired output for use with neon, cold cathode, and fluorescent loads. Hard Fired modules shall provide a current source independent of the load current for the SCR Gate Drive Signal. Hard fired dimmers shall function independent of load as a result and shall drive loads of 1 watt or less. Systems without this capability shall not be accepted.

C. ELECTRICAL

1. Each dimmer module shall contain one or two single pole circuit breakers, associated solid state switching modules, filters, power and control components.

2. Dimmer electronics shall be completely solid state. They shall utilize two silicon controlled rectifiers in a back-to-back electrical configuration. The full load of the circuit is to be carried and controlled by the silicon controlled rectifiers.
3. Each dimmer shall be protected by a fully magnetic circuit breaker of the appropriate current rating and 10,000 AIC surge rating mounted on the face plate of the dimmer module so that the trip current is not affected by ambient or rack temperature. The circuit breaker shall be rated for tungsten loads having an inrush rating of no less than 20 times normal current and shall disconnect the power to the dimmer module before damage can be done to the dimmer power components. The circuit breakers shall be rated for 100 percent switching duty applications and shall be a UL and cUL recognized device.

D. SOLID STATE RELAY (SSR)

1. SSR devices shall be encapsulated, epoxy filled high impact plastic cases with optically isolated firing circuits, control circuitry, and two silicon controlled rectifiers (SCRs). There shall be a minimum of 2,500 volts RMS of isolation between the AC line and the control lines of the SSR.
2. The SCR shall be in an industry standard format that is easily field replaceable without removing any other electrical or electronic devices.

E. FILTERING

1. Each dimmer module shall have an integral inductive filter to reduce the rate of current rise time resulting from the SCR switching on. The filter shall limit objectionable harmonics, reduce lamp filament sing and limit the radio frequency interference on line and load conductors.
2. Type (i) dimmers shall have a rise time of not less than 350 microseconds measured at 90 degrees conduction angle from 10% to 90% of output wave form with dimmer operating at maximum load. Voltage rate of rise (slew rate) must not exceed 420 millivolts per microsecond in any point of the wave under full load conditions.
3. Type (ii) dimmers shall have a rise time of not less than 500 microseconds measured at 90 degrees conduction angle from 10% to 90% of output wave form with dimmer operating at maximum load. Voltage rate of rise (slew rate) must not exceed 300 millivolts per microsecond in any point of the wave under full load conditions.
4. Type (iii) dimmers shall have a rise time of not less than 800 microseconds measured at 90 degrees conduction angle from 10% to 90% of output wave form with dimmer operating at maximum load. Voltage rate of rise (slew rate) must not exceed 210 millivolts per microsecond in any point of the wave under full load conditions.
5. The use of type i, ii, or iii dimmers shall not reduce rack density. 2.4kW and 6.0kW modules are available as types i, ii, or iii. 12.0kW modules are available as type i.

F. PERFORMANCE

1. The dimmer module shall be capable of "hot patching" cold, incandescent loads up to its full rated capacity without malfunction with the control signal at full ON.
2. The dimmer power efficiency shall be at least 97% at full load with a no load loss of 3V RMS for type i dimmers.

III. SUPPLY THE FOLLOWING:

Qty.	Cat. No.	Disc.
CD80SV Dimmer Bank and Processors, 3 phase 4 wire		
#	74311	Dimmer Bay, fully wired for 48 Modules, Back Buss, 3 phase 4 wire
#	74312	Dimmer Bay, fully wired for 48 Modules, Bottom Buss, 3 phase 4 wire
#	74381	CD80SV 96 Dimmer Processor w/ Single Electronics, 3 phase 4 wire
#	74382	CD80SV 48 Dimmer Processor w/ Single Electronics, 3 phase 4 wire
#	74383	CD80SV 96 Dimmer Processor w/ Dual Electronics, 3 phase 4 wire
CD80SV Dimmer Bank and Processors, 1 phase 3 wire		
#	74316	Dimmer Bay, fully wired for 48 Modules, Back Buss, 1 phase 3 wire
#	74317	Dimmer Bay, fully wired for 48 Modules, Bottom Buss, 1 phase 3 wire
#	74386	CD80SV 96 Dimmer Processor w/ Single Electronics, 1 phase 3 wire
#	74387	CD80SV 48 Dimmer Processor w/ Single Electronics, 1 phase 3 wire

#	74388	CD80SV 96 Dimmer Processor w/ Dual Electronics, 1 phase 3 wire
#	95121	CD80SV Bussing Kit - 800A (inter-rack buss kit)
#	79121	CD80SV 96 Dimmer Electronics, Single Plug In Module
#	79122	CD80SV 48 Dimmer Electronics, Single Plug In Module

Accessories

#	2-259006-010	Vibration Pad (four required for each rack) (4" x 4" cork plate bonded between 2 layers of waffle design oil resistant synthetic rubber-durometer 85)
#	1-259-0009	Vibration Pad-Mason NDC-Red (4 req'd per rack) (5 1/2" x 3 1/4" molded neoprene mount w/ cap screw max. static defl.. 1/2" - durometer 50)
#	1-259001-000	Vibration Pad-Mason NDC-Green (4 req'd per rack) (5 1/2" x 3 1/4" molded neoprene mount w/ cap screw max. static defl. 'h" - durometer 40)
#	76451	CD80SV Mux Link Cable
#	76452	CD80SV Comms Link Cable
#	76453	CD80SV Contact I/p Link Cable
#	2-325355-010	Numbering Strips CD80SV Rack #1 thru #96
#	2-325355-020	Numbering Strips CD80SV Rack #97 thru #192
#	2-325355-030	Numbering Strips CD80SV Rack #193thru #288
#	2-325355-040	Numbering Strips CD80SV Rack #289 thru #384
#	2-325355-M	Numbering Strips CD80SV Rack ≥ #385 and custom. numbering strips are a set of eight per rack.

Power Supplies

#	76462	CD80SV Outlook / System Wide Control Power Supply
#	76461	CD80SV PANIC Power Supply (additional)

CD80SV Status Reporting Feedback System

#	77001	Reporter PC Software Kit CD80SV configuration and feedback system including R5232/485 converter, manual & cables
#	77002	Reporter PC Software Package software demonstration only
#	76104	Personal Desktop Computer w/ Operating System desktop computer includes the following features: --Pentium 133 CPU with 16 megs RAM --1 gigabyte HDD with Windows 95 --internal 5x CD-ROM drive --15" color monitor .28mm --User's Manual & documentation
#	76430	Computer / Processor Interface (R5232-R5485)
#	85083	Manual Set - Reporter PC (additional)

Receptacle Station Assemblies
consisting of stainless steel faceplate w/ insert & labels

#	96508	Receptacle Station - CD80SV Reporter (RJl1)

CD80SV Standard Dimmer Modules -120V

#	72314	2.4kW dual CD80SV standard FF dimmer module with primary circuit breakers and 350µs toroidal choke (120V)
#	72315	2.4kW dual CD80SV standard FF dimmer module with primary circuit breakers and 500µs toroidal choke (120V)
#	72316	2.4kW dual CD80SV standard FF dimmer module with

primary circuit breakers and 800µs toroidal choke (120V)

72318 2.4kW dual CD80SV standard HF dimmer module with primary circuit breakers and 350µs toroidal choke (120V)

72382 2.4kW CD80SV standard FF dimmer/non-dim module with primary circuit breakers (120V)

72384 2.4kW CD80SV standard FF non-dim/dimmer module with primary circuit breakers (120V)

72386 2.4kW CD80SV standard FF dual non-dim module with primary circuit breakers (120V)

72302 CD80SV dual constant module (2 - 20 ampere) (120V)

72354 1.8kW dual CD80SV standard FF dimmer module with primary circuit breakers and 300µs toroidal choke (120V)

72356 1.8kW dual CD80SV standard FF dimmer module with primary circuit breakers and 450µs toroidal choke (120V)

72324 6.0kW CD80SV standard FF dimmer module with primary circuit breaker and 350µs toroidal choke (120V)

72325 6.0kW CD80SV standard FF dimmer module with primary circuit breaker and 500µs toroidal choke (120V)

72326 6.0kW CD80SV standard FF dimmer module with primary circuit breaker and 800µs toroidal choke (120V)

72332 12.0kW CD80SV standard FF dimmer module with primary circuit breaker and 350µs toroidal choke (120V)

CD80SV Status Reporting Dimmer Modules -120V

72311 2.4kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 350µs toroidal choke (120V)

72312 2.4kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 500µs toroidal choke (120V)

72313 2.4kW dual CDSOSV status reporting FF dimmer module with primary circuit breakers and 800µs toroidal choke (120V)

72317 2.4kW dual CD80SV status reporting HF dimmer module with primary circuit breakers and 350µs toroidal choke (120V)

72381 2.4kW CD80SV status reporting FF dimmer/non dim module with primary circuit breakers (120V)

72383 2.4kW CD80SV status reporting FF non-dim/dimmer module with primary circuit breakers (120V)

72385 2.4kW CD80SV status reporting FF dual non-dim module with primary circuit breakers (120V)

72351 1.8kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 300µs toroidal choke (120V)

72353 1.8kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 450µs toroidal choke (120V)

72321 6.0kW CD80SV status reporting FF dimmer module with primary circuit breaker and 350µs toroidal choke (120V)

72322 6.0kW CDSOSV status reporting FF dimmer module with primary circuit breaker and 500µs toroidal choke (120V)

72323 6.0kW CD80SV FF status reporting dimmer module with

primary circuit breaker and 800µs toroidal choke (120V)

72331 12.0kW CD80SV status reporting FF dimmer module with primary circuit breaker and 350µs toroidal choke (120V)

CD80SV Standard Dimmer Modules - 220V

72364 3.3kW dual CD80SV FF standard dimmer module with primary circuit breakers and 190µs toroidal choke (220V)

72366 3.3kW dual CDSOSV FF standard dimmer module with primary circuit breakers and 435µs toroidal choke (220V)

72368 3.3kW dual CD80SV HF standard dimmer module with primary circuit breakers and 190µs toroidal choke (220V)

72392 4.4kW CD80SV standard dimmer (190µs)/non dim FF module with primary circuit breakers (220V)

72394 CD80SV standard non-dim/4.4kW (190µs) FF dimmer module with primary circuit breakers (220V)

72396 CD80SV standard dual 20A contactor (non-dim) module with primary circuit breakers (220V)

72373 5.5kW dual CD80SV standard FF dimmer module with primary circuit breaker and 190µs toroidal choke (220V)

72376 5.5kW CD80SV standard FF dimmer module with primary circuit breaker and 435µs toroidal choke (220V)

72378 11.0kW CD80SV standard FF dimmer module with primary circuit breaker and 190µs toroidal choke (220V)

CD80SV Status Reporting Dimmer Modules - 220V

72361 3.3kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 190µs toroidal choke (220V)

72363 3.3kW dual CD80SV status reporting FF dimmer module with primary circuit breakers and 435µs toroidal choke (220V)

72367 3.3kW dual CD80SV status reporting HF dimmer module with primary circuit breakers and 190µs toroidal choke (220V)

72391 4.4kW CD80SV status reporting FF dimmer (190µs)/non dim with primary circuit breakers (220V)

72393 CD80SV status reporting non-dim/4.4kW (190µs) FF dimmer with primary circuit breakers (220V)

72395 CD80SV status reporting dual 20A contactor (non-dim) module with primary circuit breakers (220V)

72371 5.5kW dual CD80SV status reporting FF dimmer module with primary circuit breaker and 190µs toroidal choke (220V)

72374 5.5kW CD80SV status reporting FF dimmer module with primary circuit breaker and 435µs toroidal choke (220V)

72377 11.0kW CD80SV status reporting FF dimmer module with primary circuit breaker and 190µs toroidal choke (220V)

CD80SV Test Module

72303 CD80SV test module

CD80SV Filler Modules

#	72304	CD80SV Row Filler Module (6 Dual Module Spaces)
#	72301	CD80SV Single Filler Module

#	13-199503-010	Spare Hardware Kit-CD80SV Dimmer Rack includes
	0-100071	Screw Phillips 10-32 x 1-3/4" - 4 each
	0-140046	Screw Phillips 1/4 x 20 x 1" - 4 each
	0-140060	Screw Phillips 1/4 x 20 x 1/2" - 6 each
	1-267114-000	Fuse 8 amp 5AG - 3 each
	1-290288-000	Screw Phillips 10-32 x 3/8" - 4 each
	1-290382-000	Screw Tamper-Proof 1/4 x20 x 1/2" - 2 each
	1-290383-000	Key for Tamper-Proof Bolt - 1 each
	3-411002-010	Connector Female Power/Neutral- 2 each
	2-411014-010	Connector Female Ground- 2 each
	0-000041-009	Air Filter - 1 each