ElectroShade® Electrical Notes For Standard Motors

Line Voltage Switching (1-2 motors)
Low Voltage Control with IQ/MLC™, MLC™ or FTS's (3 or more motors)

All electrical control equipment (Switches, MLCs™, IQ/MLCs™, SACs, WACs, photocells, anemometers FTS units, etc.) as indicated is furnished only by MechoShade Systems, Inc., installed and connected by (Electrical Contractor) or (turnkey by the window covering contractor).

All electrical control equipment must be wired in accordance with wiring diagrams and Standard Electrical Notes prepared by MechoShade Systems, Inc. and in accordance with the N.E.C. and local codes.

Parallel and/or series wiring of two or more motors on a single switch or any other similar combination will void any applicable warranty and cause improper operating, premature motor failure and burnout if not otherwise instructed

All wiring diagrams have been prepared for right-hand motors regular-roll, or left-hand motors reverse roll which are wired similarly. Right-hand motors, reverse-roll and left-hand motors regular-roll, require reversing the red and black motor wires at the MLC or IQ/MLC or at the switch. This will prevent the motors from running in opposite directions when left-hand regular-roll or right-hand reverse-roll motors are installed.

All control equipment, MLC's (Motor-Logic Controllers) and all equipment that may have a transformer for A/C low voltage must be wired in phase. If not in phase, premature transformer and/or motor burnout and inconsistent control operation may occur. IQ/MLC's have 12 VDC output and may be wired out of phase.

Electrical-control equipment may contain electro-mechanical relays, adjustment points, fuses, indicator lights, etc. These must be accessible for future service and adjustment in a readily available location during normal working hours without disruption to the existing operations. This equipment shall be coded by the Electrical Contractor to indicate shade location and specific motor controlled at control equipment and circuit breaker. As-Built Drawings shall be provided by others for future service.

IQ/MLC's have dip switch controller(s) and must be installed in a readily available location for proper service and future changes.

All motors are furnished with disconnect plugs for below ceiling installation. Hard wiring will void all responsibility for cost of servicing and may void warranty. The MechoShade Warranty does not include the cost of labor to remove or install or access to MechoShade equipment as specifically stated in the MSS warranty.

Green motor wires are to be fastened to the ground junction boxes, conduits, or another suitable building ground.

The standard ElectroShade® motor lead is a PVC 4 conductor #18 standard cable approximately one-foot (305mm) long with a 4-conductor disconnect pole type plug.

The standard ElectroShades are furnished with a 115 VAC (230 VAC) motor lead, approximately one foot (305mm) long, with a locking disconnect plug. A standard junction box lead, approximately 5 feet (1525mm) long, is furnished with a disconnect plug which is compatible with the plug on the motor lead.

Line Voltage Switching of one to two motors

One or two motors can be wired on a single double-pole, double-throw switch. Please refer to pages 4.10 and 4.11 for point-to-point connections.

Low Voltage Switching of three or more motors

Three or more motors wired to a single switch require the use of a four (4) motor controller such as the MLC or IQ/MLC. Five to eight motors require two such controllers; nine to twelve motors require three; and so forth. For MLC point-to-point connections see pages 4.17 and 4.18, and for IQ/MLC see pages 4.26 and 4.27.

Some point-to-point wiring diagrams may not include motor disconnect-plugs, junction boxes, and cable raceways that may be essential for a complete installation.

Note: Maximum distance low voltage wire run connected in series is 400 ft.

Conditioned Line Requirements

Line voltage must be maintained between 108 and 132 Volts for 115 VAC systems and 207-253 Volts for 230 VAC systems. In the event of spikes or drops in line voltage in excess of 10% the system may lose Memory/Programming.

Operating voltage below 108 Volts (207 Volts) (Brown-outs) may cause unanticipated performance of the motors and control system. Discontinuance of power (shut-off) will not effect IQ/MLC memory of Intermediate Positions.

FTS Double Motor system —115VAC (230VAC) utilizes a control module with low voltage switching. Ten (10) or more control modules may be wired in series or in parallel for a single master switch which shall be double pole double throw.

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ElectroShade® Electrical Notes For Standard Motors

Standard Motor Switching

The following is a brief summary of the various switching configurations that can and must be used with ElectroShade® standard motors.

Line Voltage Switching

1. One Motor, One Switch: This arrangement requires a double throw (on/off/on) switch. Either single or double-pole switches can be used. (MechoShade® Systems stocks only double-pole, double-throw switches as standard equipment.)

2. One Motor, Two or More Switches: A multi-switch command enables two or more momentary switches to be used with a single motor.

3. Two Motors, One Switch: A double-pole, double-throw switch (D.P.D.T.) is required and can be momentary or maintained.

4. Two Motors, Two or More Switches: Momentary center off switches must be used.

5. Remote Control: Wireless transmitters and receivers are available.

IQ/MLC™ Four Motor Controller

1. Four Motors, Four Local Switches and Two Master Switch Ports With 3 Auto Intermediate Stop Positions:. Each IQ/MLC handles up to four motors. Three button switches provide intermediate window positioning at the touch of a button. Motors can be assigned to any combination of the four motors and four Local Switches connected to an IQ/MLC to create groups and sub groups. Master Switch controls all.

For 1 to 4 motors require one IQ/MLC. Five to eight motors require two IQ/MLC's. Nine to twelve motors require three, and so forth.

2. Intermediate Stop Positions: Three intermediate stop positions plus full up and full down. Five positions total. Custom set intermediate stop positions or auto stop at 25%, 50% and 75% of window height.

3. Two modes of operation: "UniformMode™" for uniform window covering operation and building exterior. Shades may only stop at preset positions. "Normal Mode" for five auto stop positions plus stop anywhere on the window.

4. Internal Motor/Switch Assignments: Motors and switches can be assigned to each other by adjusting the internal on/off Switch/Motor Dip Switch controls.

5. Optional RS232/485 Interface: RS485 protocol with a PC requires a 485 PC card or an optional IQ/MLC RS232 or 485 Adapter. Up to 5 zones per interface adapter, up to 12 IQ/MLC units per zone. Allows a total of 60 control units per interface.

MLC™ Four Motor Controller

1. Four Motors, Master Switching Only: Each MLC handles up to four motors. Momentary or maintained switches can be used. Master.

2. Two or More Master Switches: Each switch must be a momentary switch. Any switch will control all the motors simultaneously. Master switching only.

3. Remote Control: Wireless transmitters and receivers are available. Optional.

SkyLighter™ Double Motor System (SDMS/FTS)

1. SkyLighter™ Double-Motor Tension System: SkyLighter shade operation utilizes a pair of operating motors with a low voltage Double-Motor Control Module to establish and maintain a taught horizontal or inclined shade. A single Double-Motor Control Module is required for each pair of operating motors. Two (2) or more SDMS modules can be wired in parallel or series to a single momentary contact switch.

AAC SolarTrac™ System

1. AAC SolarTrac™: A PC based user-defined program that automatically adjusts window shades to the year/day solar condition. Determines the microclimatic conditions and adjusts the shades incrementally on the window to anyone of 5 or more positions on a window. All shades are adjusted in accordance with the solar load, solar penetration and the particular facade of solar orientation as established by the user.

Low Voltage Accessories / Definitions

1. Sun-Activated Control (SAC): The SAC module is furnished with a "K" Value photo sensor. The SAC module has manual/auto mode selector plus master switching in the manual mode. An optional Remote Manual/Auto Switching Controller is available. Compatible with the MLC and IQ/MLC motor controllers. The IQ/MLC requires an optional interface.

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ElectroShade® Electrical Notes For Standard Motors

2. Wind-Activated Control (WAC): The WAC module is furnished with a “K” Value photo sensor. The WAC module has manual/auto mode selector plus master switching in the manual mode. An optional Remote Manual/Auto Switching Controller is available. Compatible with the MLC and IQ/MLC motor controllers.The IQ/MLC requires an optional interface.

3. 24-Hour Timer: A 24-hour timer is furnished with a remote manual override switch. Compatible with the MLC and IQ/MLC motor controllers. The IQ/MLC requires an optional interface.

4. IR or RF Remote Control (A/V or Bus): An IR or RF remote control through the use of a hand-held transmitter. Remote controls are available for the MLC and IQ/MLC Four Motor Controllers.

5. RS-232 Interface: RS-232 translates the RS-232 protocol for use with ElectroShade controllers. This addressable unit connects any PC, building automation or lighting system to the MLC and IQ/MLC Four Motor Controllers.

The RS-232/485 interface provides up to 5 zones per interface adapter, up to 12 IQ/MLC units per zone. Allows a total of 60 control units per interface.

RS232: P/N: EMLC 0232 RS MO (PC to 1st interface)
RS485: P/N: EMLC 0485 RS MO (interface 2 and up)

I•CON™ has a dedicated Wide Zone switch port for access to the entire system.

6. Switches: A complete line of low voltage and line voltage switches are available as:

- Paddle switches (maintained): for the MLC Four Motor Controllers.
- Rocker switches (maintained and momentary): for MLC Four Motor Controllers.
- Décor switches (pulse): for MLC and IQ/MLC Four Motor Controllers.
- Indoor key switches (maintained and momentary): for MLC and IQ/MLC Four Motor Controllers.
- Digital key pads: for MLC and IQ/MLC Four Motor Controllers.
- Plus, Lite-Touch Type H Series (or similar pulse type switch) for IQ/MLC Four Motor Controllers and I•CON Bus Line System:

  IQ/MLC (full function up/down, stop with 3 intermediate stop positions on a 3-button single station or 6-button dual station switch).

  I•CON (full function up/down, stop with 3 intermediate stop positions on a 4-button single station or 8-button dual station switch).

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ElectroShade® Systems Specifications
For Standard and Intelligent Motor Control Systems

Description

The ElectroShade® Motorized Shading System consists of

Section 1.0	ElectroShade Motor System
Section 2.0	Switching and Control System For Standard and Intelligent Motor Systems
Section 3.0	Electronic Relays (IQ/MLC and MLC™ Four Motor Controllers)
Section 4.0	Intelligent Motor Control System™/2 (I•CON™)
Section 5.0	Sun Activated Control
Section 6.0	AAC SolarTrac™
Section 7.0	Controls and Switching
Section 8.0	Pockets and Accessories
Section 9.0	Shade Cloth, Films, Laminates

The System is designed, developed and fabricated to be a totally integrated unit and is furnished by the manufacturer, MechoShade Systems, Inc., with a warranty which provides that all components (motor, shade cloth, electrical controls and override circuits) have been designed, tested and approved as a compatible system.

1.0 ElectroShade® Motor System

1.1 Motor: The motor shall be an asynchronous (non-synchronous) motor, with a built-in reversible capacitor start-and-run, and shall operate at 108 to 132 VAC at 60hz. (216-264), in single phase, with a Class-A temperature rating (max. temperature rating of 140 C.). The motor shall have thermal-heat protection and be totally enclosed and maintenance free, with a locking disconnect plug assembly furnished with each operator. For intermittent operation of ON ±5 minutes / OFF ±30 minutes the running time will vary slightly with each motor. Motor running time after thermal overheating shall be ± 3 minutes at room temperature.

1.1 Electronic Motors shall have either a manual thumbscrews, push-button or electronic limit switch for adjustment.

1.2 Limit Switches: Internal limit switches, adjusted electronically or by two external thumbscrews or push-buttons, shall allow the exact setting of travel in both the raised and lowered positions. Micro switches shall provide circuit braking at the end of the run. The limit switch setting will not be disturbed by the action of the roller tube.

1.3 Brake: A solenoid activated disc brake mechanism shall stop and hold the shadeband in any position. The brake shall automatically disengage when the motor is operating.

1.4 Gear Box: Multiple levels of satellite gears shall be provided for load distribution (planetary gears) and machined from close tolerance tempered steel. The speed shall vary according to the motor model from 10 r.p.m. to 64 r.p.m.

1.5 Installation: A single pin, or star spring wire, shall lock the drive end of the motor to the tube. A notched section of the tube shall turn the ring, which counts the turns and activates the limit switch. To interchange motors, the pin or spring shall be pressed out of the tube and the able to motor slide out.

1.6 Sizes: The motors shall be available in torques of 35-435 in. lbs. (lifting capacity), 10-64 r.p.m. speed to meet specified requirements and shall not exceed 60 mm in diameter as 115 VAC (230 VAC) motors.

1.7 Warranty: The manufacturer shall provide a warranty that the motor is free of manufacturing defects for five (5) years from the date of sale. This warranty shall be void if the products have been improperly installed, wired or subjected to improper care.

2.0 Switching and Control Systems for Standard and Intelligent Motor Control Systems

[Select the appropriate components for an Intelligent system]. All systems shall be U.L. or E.T.L., CA or EU requirements listed and meet electrical code requirements.

2.1 Control Wiring for Line Voltage Switching: One or two ElectroShades shall be controlled by a single line voltage D.P.D.T switch.

2.1.1 Manual Switches: Double pole, double throw center off manual switches shall operate one or two motors per switch. For three (3) or more motorized shades, low voltage controllers shall be required. (IQ/MLC and I•CON.)

3.0 Electronic Relays (IQ/MLC™ and MLC™ Controllers Four (4) Motor Controllers)

[Select the appropriate Four Motor Controller the capabilities desired].

Each Four (4) Motor Controller (listed below) shall provide low voltage control capability over line voltage standard motors (115 VAC) (230 VAC); isolating up/down control relays between the switch ports and motors for low voltage control. Each Four (4) Motor Controller shall offer specified levels of control for

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master and/or local individual/group control according to the capabilities and features of each system listed below. Each Four (4) Motor Controller shall be compatible with Sun-Activated Controllers and Wind-Activated Controllers, 24-Hour Timers, Key Switches and Digital Key Pads and Remote Control. (An interface may be required depending on the accessory and Four Motor Controller selected).

All Four (4) Motor Controllers shall have 4 fuses, line voltage transformers that convert line voltage currents to allow for low voltage multi-switch control.

All Four (4) Motor Controllers shall be U.L. or E.T.L., CA or EU requirements listed and meet electrical code requirements.

3.1 IQ/MLC™ Low Voltage Four (4) Motor Controller (option)

In addition to 3.0 above, each IQ/MLC Four (4) Motor Controller shall have:

3.1.1. Master Control with Local Individual/Group Control: Each IQ/MLC shall have master control able to control all motors connected to all IQ/MLC's on the same circuit; and have four (4) 12 volt local switch ports which control any combination of the four motors connected to each IQ/MLC controller. Local switch port connections shall be 4-conductor telephone style RJ11 and master switch port connections shall be 6-conductor RJ12. Switches shall be either 3-button single station, 6-button dual station Lite-Touch Type H Series (or similar pulse switch) or a 3-button single station Décor switch for full up/down and 3 intermediate stop position functionality.

3.1.2. Assignable Local Individual/Group control: The IQ/MLC shall allow for assigning any of the four motors connected to an IQ/MLC by simply assigning the switch/motor assignments of any local switch port utilizing the local switch port dip switches within the IQ/MLC.

3.1.3. IQ/MLC, Automatic Shade Alignment with (5) Five Stop Positions and Auto Intermediate Stop Functionality: The IQ/MLC shall provide automatic shade alignment according to the combination of buttons pressed at the switch for any of 5 positions for full up/down and 3 intermediate stop positions. The intermediate stop positions shall be either auto set at 25%, 50% and 75% of the window height or custom set as required. Auto alignment of all shades will automatically occur regardless of weight or size to each of the individual stop points or up/down positions.

3.1.4. IQ/MLC, Normal Mode and UniformMode™ of Operation: In the normal mode, shades shall stop at the 3 custom or auto set intermediate stop positions plus full up/down or anywhere on the window. In the UniformMode, the shades may only stop at the 3 custom or auto set intermediate stop positions plus full up/down. UniformMode option shall be available through special button pushes.

3.1.5. Reconfigure Switching Capability Without Rewiring: The IQ/MLC shall allow for "reconfiguration" any of the four motors connected to an IQ/MLC by simply reassigning the switch/motor assignments of any local switch port utilizing the local switch port DIP switches within the IQ/MLC and activating the reset button on the PC board. Any switch may be configured to control any combination of the four motors.

3.1.6. Master Control Of More Than Four (4) Motors: The system shall be able to allow for daisy chaining of two or more IQ/MLC's, utilizing the master switch ports, for master control of five (5) or more motors. With an IQ/MLC Sub Group Controller (P/N: IQML SGC6 RJ BD) connecting up to four (4) IQ/MLC units, a total of 16 motors and local 16 switches, shall be possible on a single master switch circuit. A maximum of 12 IQ/ML's, a total of 48 motors and local 48 switches, may be daisy-chained on a single circuit from master switch circuit.

3.1.7. RS-232/485 Compatibility Option: If the RS485 protocol is required then a 485 PC card or an IQ/MLC RS232 or 485 Adapter is required and shall allow up to 5 zones per interface adapter, up to 12 IQ/MLC units per zone. A total of 60 control units per interface.

RS232: P/N: EMLC 0232 RS MO (PC to 1st interface)
RS485: P/N: EMLC 0485 RS MO (interface 2 and up)

3.2 MLC Four (4) Motor Controllers

In addition to 3.0 above, each MLC Four (4) Motor Controller shall have:

3.2.1. Master Control ONLY: Each MLC shall have master control able to control all motors connected to all MLC's on the same circuit. Up to 25 MLC's, a total of 100 motors and 2 switches, may be wired together on a single switch circuit. Note: MLC's cannot have individual, group or overlapping switch control and are not available with intermediate stop positions.

4.0 Intelligent Motor Control System™ (I•CON)

I•CON shall provide a complete shade control system with two-way busline communication for low voltage control capability over line voltage standard motors (115 VAC) (230 VAC); isolating up/down control relays between the switch ports and motors for low voltage busline control. I•CON™ shall be

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compatible with Sun-Activated Controllers and Wind-Activated Controllers, 24-Hour Timers, Key Switches and Digital Key Pads and Remote Control. (An interface may be required depending on the accessory).

I•CON shall be U.L. or E.T.L., CSA or EU requirements listed and meet electrical code requirements.

4.1 The I•CON system shall consist of:

- 4.1.1 A two motor Bus Interface (BI).
- 4.1.2 Local Zone Switches (connected to the BI).
- 4.1.3 Wide Zone Switches (connected anywhere on the busline).
- 4.1.4 Hand-Held Configurator which shall access the BI for the following:
  - 4.1.4.1 Selecting any BI by Location (4 digit.)
  - 4.1.4.2 Select BI Motor (Left or Right).
  - 4.1.4.3 Cause any motor to “WINK” for verification of location.
  - 4.1.4.5 Access or Change Local Zone address.
  - 4.1.4.6 Access or Change Wide Zone addresses.
  - 4.1.4.7 Access or Change BI Location address.
  - 4.1.4.8 Access Normal/UniformMode™s and change accordingly.
- 4.5 Bus Supply shall maintain power over the busline.
- 4.6 Busline Repeater shall maintain the signal over the busline beyond 64 nodes.
- 4.7 Bus Supply/Repeater shall maintain both the power and signal over the busline beyond 64 nodes.

4.1.2 Switching: The I•CON shall have a two Motor Bus Interface (BI) with 8 Wide Zone Addresses and 2 Local Zone Addresses, for a total of ten addresses per motor. Each BI shall have a micro-processor with a unique Neuron ID. Motors connected to a BI shall respond to a command from any Wide or Local Zone switch with a corresponding address.

4.2 Wide Zone Switching: Each Wide Zone Intelligent Switch (WZS) on the bus line shall have a micro-processor with a unique Neuron ID and can be connected anywhere in the bus line. The Wide Zone Switch shall store one manually set address. Wide Zone switches with different addresses shall have the capability to be wired in series to the bus line and to adjacent Wide Zone switches. All motors with the same address in their BI Wide Zone address table shall respond to any and all Wide Zone switch commands with the corresponding address.

4.2 Local Zone Switching: The standard Local Zone Switch (LZS) does not contain a microprocessor and is connected to the BI on the left or right side. Each standard Local Zone Switch, shall broadcast one Local Zone Address from the BI for that switch. Up to two (2) Local Zone switches may be hard wired to the BI via terminal blocks or RJ12 connectors, one each for operation of each of the left and right motors; and for broadcasting over the bus line.

All motors with the same address in their BI Local Zone Address table shall respond to any and all Local switch commands with the corresponding address.

4.3 Alignment: I•CON shall have full up/down and stop functionality with up to 4 aligned intermediate stop positions (20%, 40%, 60% and 80% fo the window height) or custom selected stop positions or any combination thereof.

All shades, regardless of size or weight will align at each of the intermediate stop positions.

Shade system shall have the capability of exactly repeating the selected stop position from the top down or bottom up cycles.

4.4 Programming:

A hand-held Programmer shall be provided in order to program the system as listed in 4.1.4. The programmer may be attached to any Wide Zone Intelligent Switch (WZS), or to the bus line or any BI. This dedicated unit shall be able to be used in place of a computer to access the bus line, affect changes or monitor the system.

5.0 Sun-Activated Control (SAC)
(sun daylight intensity, up/down only)

A Sun-Activated Control shall automatically operate the interior shades (up or down), when the daylight intensity at the window reaches a pre-set level. An adjustable time-delay control for cloudy days shall be included. The system shall consist of a solid-state central control unit and a separate photocell sensor (that measures daylight K values). The photocell shall sense the daylight intensity at the window and activate the SAC unit to the move the shade(s). The sensitivity of the photocell shall be adjustable.

5.1 Externally Installed ElectroShades® with Anemometer and Photoelectric Control: For use with the externally installed ElectroShades, the photosensor is expanded to include an anemometer to measure wind velocity. Overrides the photosensor by raising shades when, and if, wind velocity

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exceeds a pre-set point. (See drawings in MechoShade® literature.) All of the preceding versions may be implemented on local, submaster or master levels. On all control levels, manual override must be provided. AAC SolarTrac may be needed.

6.0 AAC SolarTrac™ System (sun angle; incremental shade movement; interior or exterior shades)

Solar tracking software automatically adjusts shade positions in accordance with the sun's angle of incidence, solar heat-gain factor in BTU's or profile angle and allowable solar penetration. This multi-zone control system automatically calculates clear-sky solar values daily and also monitors the output of three solar meters to determine if cloudy and overcast conditions exist. Solar meters measure the total solar spectrum of U.V. daylight (K value) and IR (heat). When the AAC SolarTrac is integrated in a system the number of aligned intermediate stop positions may be increased to 10, 20, etc.

6.1 The AAC SolarTrac software has many user programmable functions as well as complete manual override capabilities: Integration with "smart building" systems is an optional feature. Executive lockout daily switch control for executive and conference rooms. Integrates with the Intelligent Motor Control System™ (I•CON), and IQ/MLC™ Systems.

6.2 Custom-Designed Controls: Automatic shade controls which tie into a separate building management system, such as HVAC and lighting, will be quoted on a job-by-job basis. Controls such as these would coordinate the automatic adjustment of interior lights, HVAC and shading devices on a minute-by-minute basis in conjunction to climatic conditions, pre-set levels of comfort, and sensed zone cooling or heating requirements.

7.0 Controls and Switching.

All electrical controls and switching systems are subject to the approval of local codes which must be employed in their installation.

8.0 Pockets and Accessories Required for a Total Integrated System

8.1 Shade Roller: Extruded aluminum tube, 6063-T6 alloy, 2.55 in. (65 mm), 3.55 in. (90 mm) or 4.5 in. (114 mm) OD (as required) with internal keyway to receive tubular motor. (The tube is also extruded with two fabric-mounting channels designed to support the shade bands without additional wraps of fabric on the tube, to permit mounting and dismounting of the shade bands and without requiring removal of the tube or motor assembly from the mounting brackets.)

8.2 Mounting Spline: Extruded vinyl with asymmetrical locking channels and embossed fabric guide for use with 2.55 in. (65 mm), 3.5 in. (90 mm) and 4.5 in. (114 mm) OD tube. Spline has sufficient capacity to support the shade and additional hem weights without disengaging from the tube without extra wraps of fabric on the tube. SnapLoc® Spline shade band assembly may be installed or removed from the shade tube, or tube/motor assembly, without disassembling or removal from their mounting brackets.

8.3 End Brackets: Consist of 1/8 in. (3 mm) or 3/16" (4.5mm) thick sheet steel. Wall, jamb or ceiling mounted as required and permanently installed. Brackets (without exposed fastening) shall accept a continuous SnapLoc® Fascia (closure) friction fit. Fascia shall be installed as a single unit over two or more shade band assemblies without exposed joints in lengths comparable to the maximum standard lengths of fascia available. Max. length 15 ft. (4572 mm).

8.4 Center Support Brackets: Supplied to meet span or weight requirements. Ceiling or wall mounted. Center support brackets shall accept continuous lengths of fascia, which will span two or more MechoShade® bands is at a minimum length of 15 ft. (4572 mm). Fascia shall be provided for standard height and extended height brackets and in center support brackets. Fascia shall be provided in minimum of 15 ft. (4572 mm) lengths and clipped on to two or more shades without both notches for the shade bands.

8.5 Hembar Weights: Mill-finished aluminum, flat bars, single lengths for each shade panel.

8.5.1 Exposed hembars in painted and baked PPG finishes with key way for shades.

8.6 DualShade® Mounting System: The patented mounting system by MechoShade Systems, Inc., for installing ThermoVeil® shade cloth and MirroFilm® to the same roller by means of SnapLoc® fastener. The shade cloth and film shall be separated by a 1/2 in. (13 mm) second stagnant air space between the window and the room air environment. Lowering the "U" value of the shade and glazing system.

8.7 Fascia: Extruded aluminum 6063T5 baked PPG enamel finish in standard colors specified. May be used for surface

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mounted ElectroShade System installation. Snaps on with concealed fastenings that hide the bracket assembly and appears as a continuous unit when mounted side to side. Fascia shall be provided for Standard and Extended height shades. Fascia shall be provided in minimum of 15 ft. (4572 mm) lengths.

8.8 4123 Pocket with Bottom Closure: Manufactured from extruded aluminum 6063T5 baked PPG enamel finish in standard white or standard custom colors by special order. Recessed Housing is specifically designed for acoustical or plastic ceilings with removable closure plate for access to the recessed and concealed roller system.

8.9 Double Motor Pockets: Pockets of various sizes for double motorized shades or high bay shades shall be fabricated of minimum 16 ga. coated steel. Exposed elements shall be continuous extruded aluminum to match the 4113 Pocket closure assembly. Closure may be 2" (51 mm), 2 1/2" (63 mm), 3" (76 mm), 5" (127 mm) or others as required for extruded aluminum 6063T5 baked PPG enamel finish. 10 ft. lengths.

8.10 Finishes: All exposed aluminum parts have an anodized or painted finish which, under normal conditions, prohibits deterioration of the aluminum. Steel parts are either cadmium plated, satin finished or have been bonderized prior to painting with a baked enamel finish. All painted finishes are baked. Sheet steel shall be paint-loc or equal.

9.0 Shade Cloth, Films and Laminates

See specifications for ThermoVeil and DualShades in Section 5, pages 5.2, 5.5 to 5.9.

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