

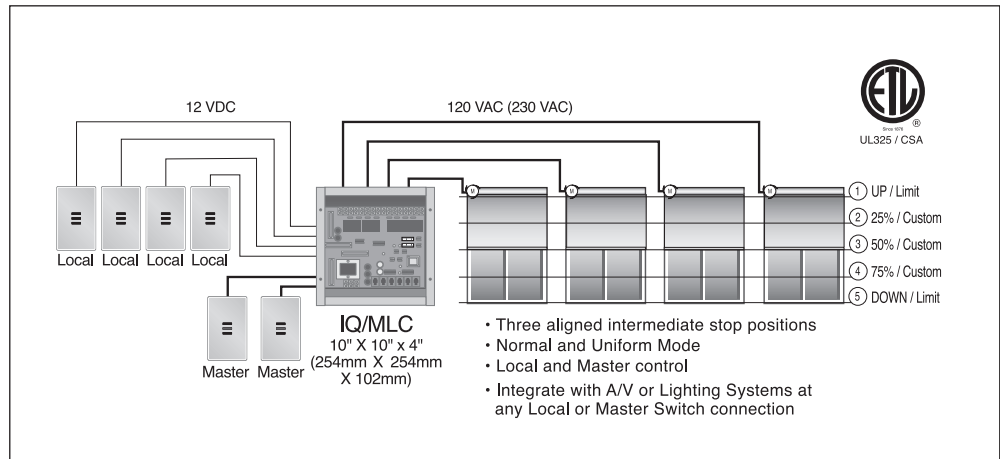
Hardwired: Low Voltage Controls – IQ/MLC™

Low Voltage Control (Hardwired)

IQ/MLC™

Features:

- Multi-Level Control for 4 standard line voltage tubular motors
- 5 Guaranteed Alignment Points (3 Programmable Intermediate Stops)
- Daisy chain to orchestrate master control on up to 40 motors
- Normal & Uniform Mode
- Integrates w Sensors, Times, Remotes, etc.
- Seamless Integration into Lighting and other 3rd Party Control Systems
- Integrates with AAC



Description

The IQ/MLC possesses advanced control functionality beyond that available from Line Voltage Switch activation or the MLC low voltage controller. This device is designed to accommodate discriminating applications involving the control of individual or groups of shades where mid-window positioning and guaranteed alignment across multiple shades is required. The IQ/MLC is operated by a decorative, 3-button switch providing convenient, one-touch positioning of the shade to one of five (5) alignment points on the window. The same shade can be operated individually AND by an overriding master control. A choice of user modes can force the shade to only stop at the alignment points thus preserving the consistency of the interior and exterior building design. These controllers are best suited for renovate/new construction projects where the control wiring can be conveniently run behind the drywall. Surface mount raceway and drop ceilings can enable these devices to be installed in retrofit projects as well. Reconfiguration of motor-switch grouping can be easily handled without rewiring by simply changing a DIP switch setting.

Detail

MechoShade's IQ/MLC is a hardwired, low voltage controller offering individual, group and master control of four (4) standard, line voltage motors (120/240 VAC, 50/60 Hz). The IQ/MLC provides control and power distribution functionality to each motor which independently fuses the motor and protects it from power surges, improper wiring and inappropriate activation thus ensuring the maximum lifetime out of the shade motors and the system.

The IQ/MLC is a microprocessor-based controller equipped with a low voltage control network that enables UP/DOWN and "one-touch" mid-window positioning of its motors through the IQMLC 3-button switch. The advanced logic capabilities of the IQ/MLC offer five (5) alignment points across the operation of each motor including three (3) programmable mid-window alignment points. These alignment points provide assured alignment across multiple shades – REGARDLESS OF WINDOW HEIGHT. The controller also permits each low voltage input to be controlled using one of two different operating modes. Normal Mode permits the shade to be stopped anywhere across the entire height of the window. Uniform Mode enables the shade to be stopped ONLY at the alignment points thus ensuring at all times a consistent look across the window wall.

Continued 

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.21
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

Low Voltage Control (Hardwired)

The IQ/MLC's low voltage control network (12 VDC) offers a cost effective opportunity to extend the control of the motors through contact closure devices into multiple locations and multiple sources. Four Local Input connections are provided to enable individual and group control capability through DIP-switch assigned combinations of all four motors. The DIP switches are a convenient way to alter Switch-Motor assignments without rewiring. Two Master Input connections enable simultaneous operation of all four motors through a common switch. (Up to 10 MLCs (40 motors) can be daisy chained over the low voltage network to operate from a single switch connection.) Switches and low voltage accessories wire directly to the Local and Master Inputs in a hardwired fashion for ease of troubleshooting. The IQ/MLC low voltage network can operate with a variety of third party contact closure switches, low voltage accessories (ie. automation sensors, timers, remote controls, etc.) and controls supporting seamless integration into Lighting, HVAC, A/V and Building Management Systems (BMS).

The IQ/MLC has been qualified by ETL under stringent system testing requirements with regard to UL325 and CSA 22.2 along with all of MechoShade's available motors and hardware systems. This provides the installer and end user with additional confidence that the ENTIRE MechoShade solution and the methods used to install and wire it meet the strictest safety and reliability standards in the industry.

Continued 

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.22
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC – Features

Low voltage switching for Standard Motors using a four (4) motor IQ/MLC™ motor logic controller. Local, group, and master switching, plus 5 aligned stopping positions.



*First National Bank of Hawaii, Honolulu, HI
Kohn Pederson Fox Associates – Architects
Gensler – Interiors*

IQ/MLC™ WindowManagement System

User Defined Mid-Window Alignment with “Normal” Mode and “UniformMode”.

Intermediate stop positions

Mid-window alignment, 5 positions: full up, full down plus 3 intermediate stops defaulting to 25%, 50% and 75%, or programmable to align with architectural features. Shade band alignment at each mid-window stop position. Assured alignment can be maintained across multiple shades to each mid-window position.

A/V, Home Theatre and PC

Optional RS-232/485 interface, or third party dry contact closures for integrated control.

Two (2) Operational Modes

UniformMode™:

Shades may only be stopped at up; down or one of the three intermediate stop positions assuring modular uniformity for the project.

Normal Mode:

Shades may be stopped at the full up, full down, the three intermediate stop positions or any where in between.

Master, group and individual switching

With four local switch ports, plus two master ports, control any combination of the four motors attached to an IQ/MLC to create multiple levels of control for Sub-Group, Group and Master Switching. Daisy chain local and/or master switch ports of two or more IQ/MLC's to form large groups or networks of motors.

Motor/switch assignment flexibility to control each of 4 local switch inputs

DIP switches conveniently configure each local switch (4) to any combination of the four internal motors in order to orchestrate individual and group motor control. Reconfigure switching zones without rewiring.

Optional Remote Control

Use wireless remotes to control the IQ directly or through an A/V or Lighting System interface.

Note: With the IQ/MLC™ some motors can be in the “Normal Mode” while others are in the “UniformMode™”

Continued 

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.23
MS2200 - 01/01/08



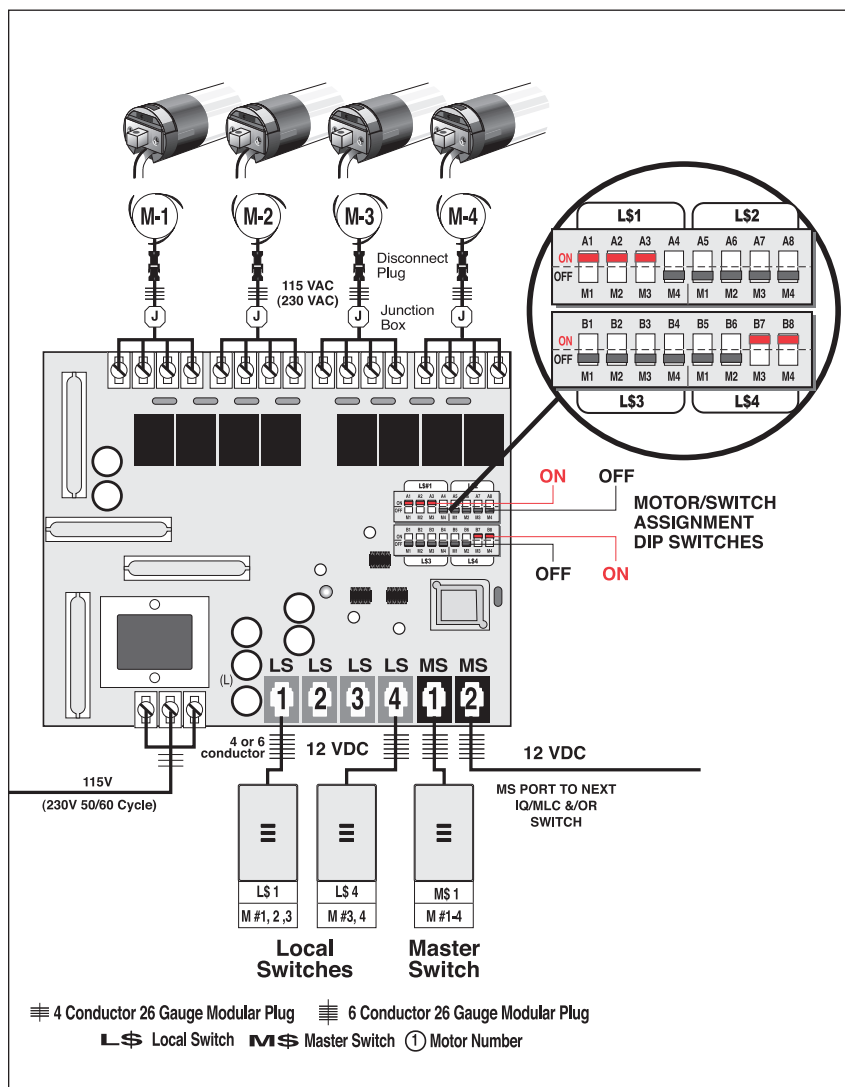
Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC™ – Features

IQ/MLC™ – Motor/Switch Assignments

DIP switches define the switching relationship between the four internally controlled motors on each of the four local switches.

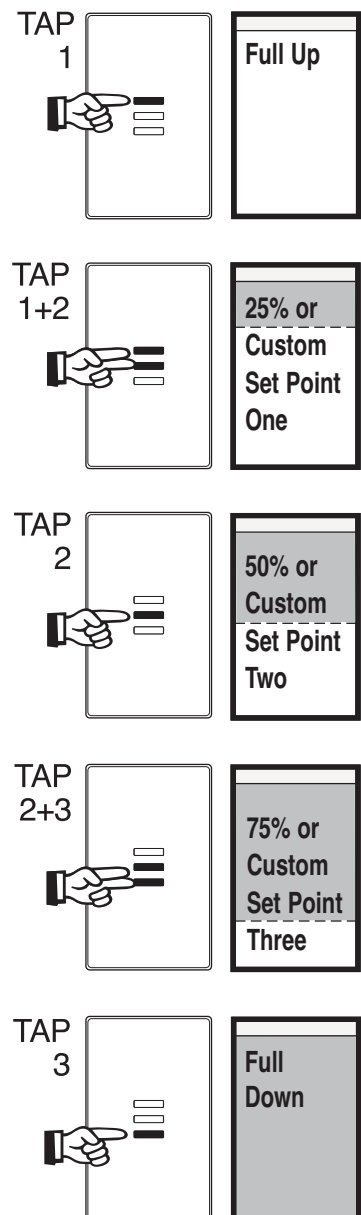
To assign a specific motor to a local switch input move the appropriate DIP switch to the “ON” position. When all DIP Switch positions are finalized, push twice to RESET button.



In this scenario Local Switch #1 controls Motors 1, 2 and 3.
Local Switch #4 controls motors 3 and 4. The Master Switch controls all.
Switches #1 and #3 have no control function.

Switch Operation

Tap the appropriate combination of buttons on any one of the Local or Master Switches and all the shades assigned to that switch will align at either of 5 positions shown below:



Continued

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

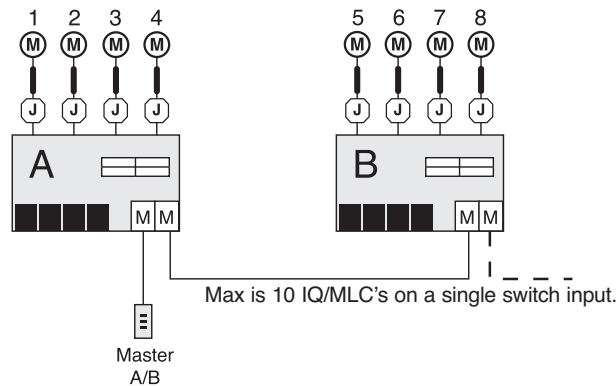
4.24
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC – Applications

Orchestrating Large Master Groups



KEY:

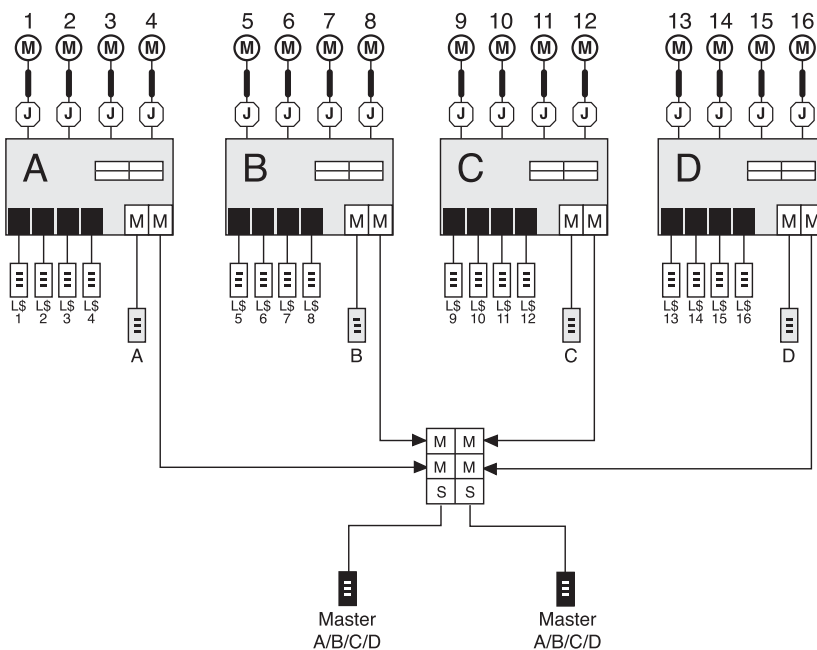
- Motor/Switch Assignments (16 Dip Switches, 4 per local switch)
- Local Switches A 1-4, B 5-8
- Group Switches A and B
- Master Switch A/B with approved "T" connector

WARNING: SPLICES IN CONTROL LINE!

Use only approved modular cable type "T" connectors mounted to back of switch.

Local Switches cannot be ganged to control motors on two (2) IQ/MLC units.

Orchestrating Large Groups with Multi-Level Control



KEY:

- Motor/Switch Assignments (16 Dip Switches, 4 per Local switch, one for each motor)
- Local Switches A 1-4, B 5-8, C 9-12, D 13-16
- Group Switches A, B, C, D with Sub Group Control
- Master Switches A/B/C/D
- IQ Sub Group Controller (SGC) for up to 4 IQ/MLC™ units

Max is 10 IQ/MLC's on a single switch input.

For more complex configurations and higher level of control see the I-CON.

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

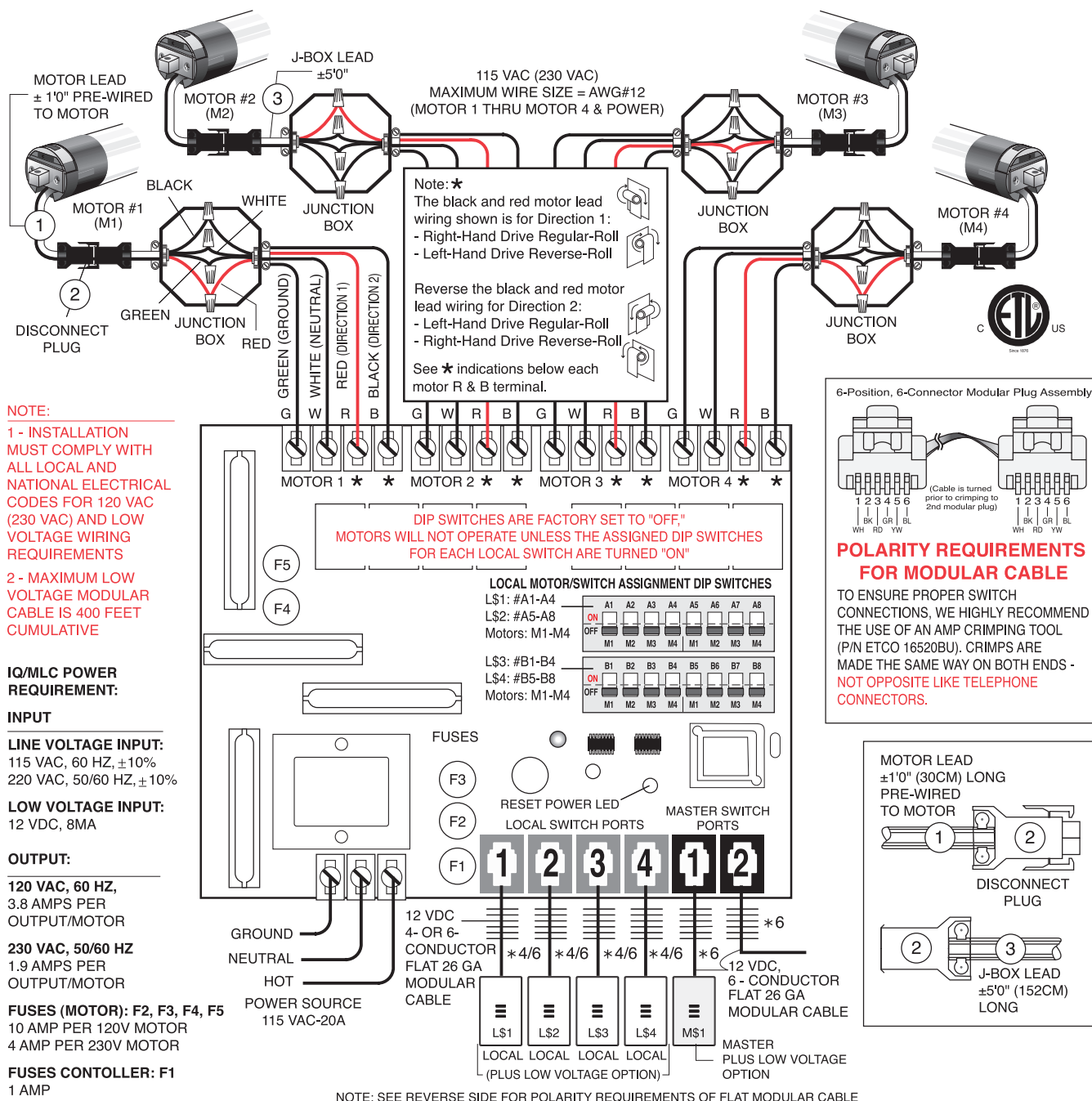
4.25

MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

Low voltage switching for standard motors using a four (4) motor IQ/MLC™ motor logic controller.



Continued

MechoShade Systems, Inc.
 42-03 35th Street, Long Island City, NY 11101
 Telephone: 718-729-2020
 Fax: 718-729-2941 / 800-899-8081

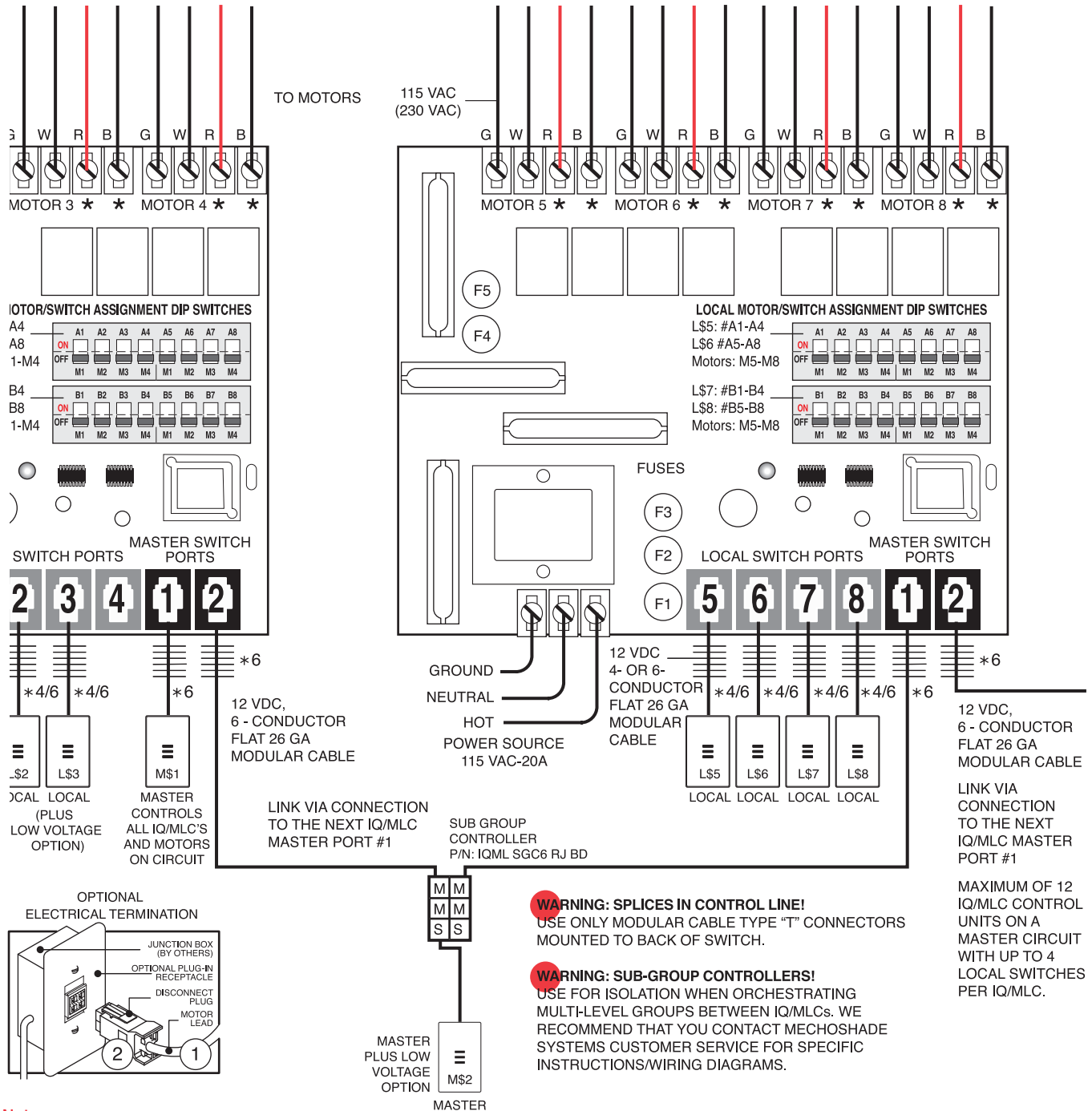
E-mail: info@mechoshade.com
 Internet Web Site: <http://www.mechoshade.com>

604/2
 REVISION
4.26
 MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

How to connect two or more (4) motor IQ/MLC™'s, with five or more standard motors.



Note:

Drawings are incomplete unless both pages of this Wiring Diagram, 4.26 – 4.27, plus the Electrical Notes pages 4.49 – 4.51 are included.

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

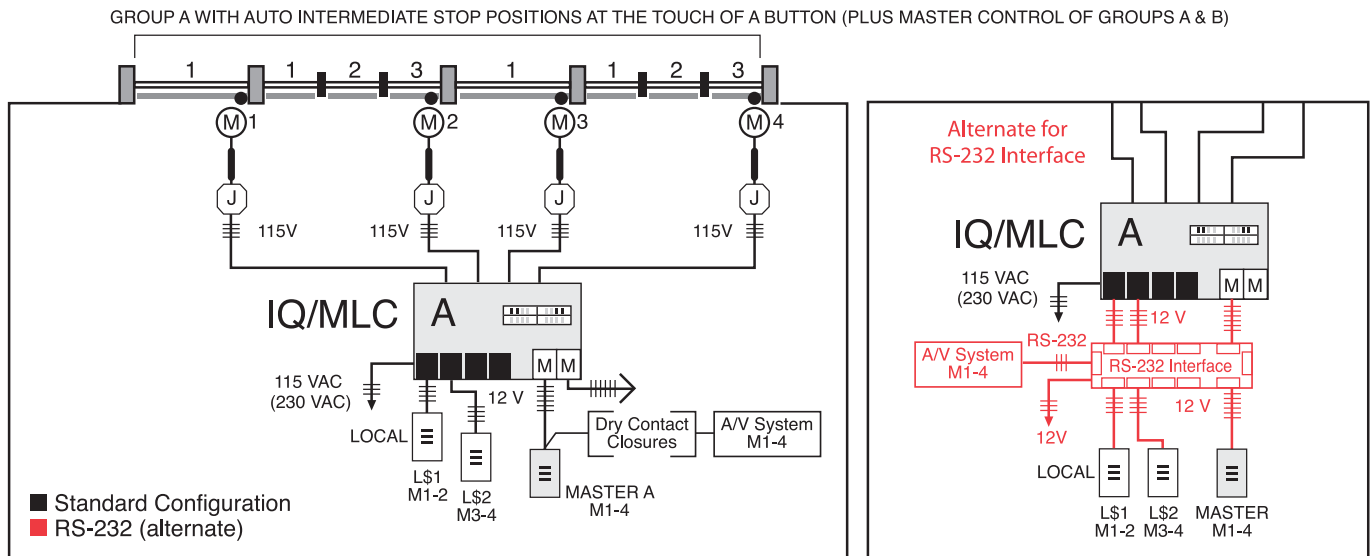
604/2
REVISION
4.27
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC Applications

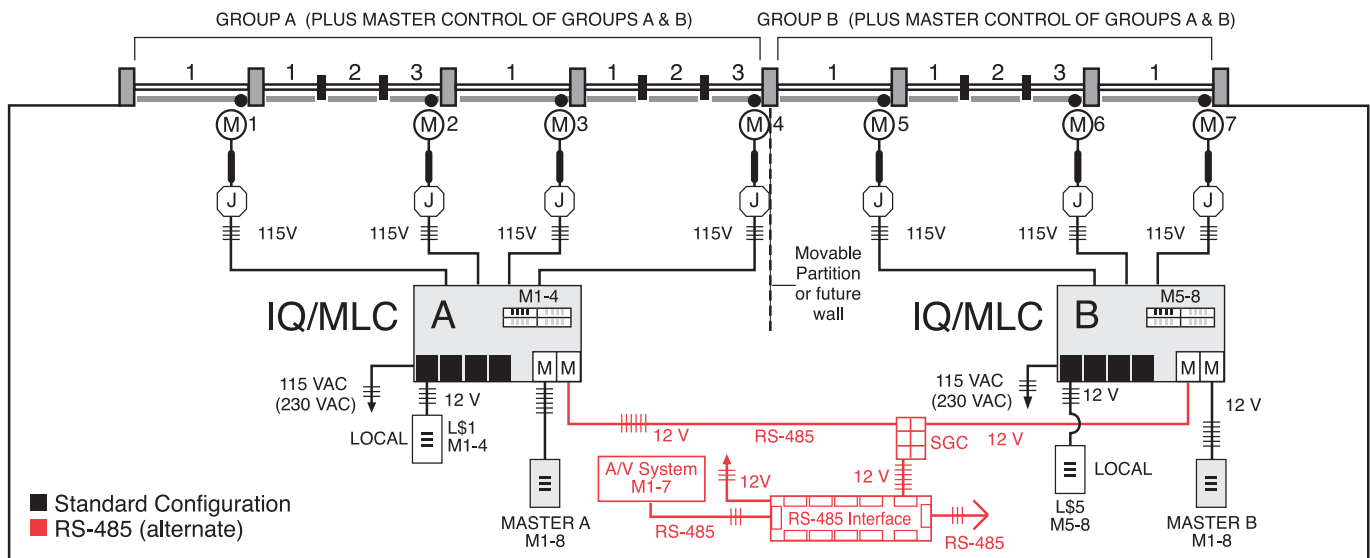
IQ/MLC™ with standard motors for single and multibanded shades



LOCAL & MASTER CONTROL

With auto-set intermediate stop positions for assured alignment.

- Local Switch LS1 controls motors 1 & 2 via internal dip switches.
- Local Switch LS2 controls motors 3 & 4 via internal dip switches.
- A/V System, with a dry contact or RS-232 interface, controls motors 1-4.
- Master Switch A controls motors 1-4.



LOCAL & MASTER CONTROL

With auto-set intermediate stop positions for assured alignment.

- Local Switch LS1 on IQMLC A controls motors 1-4 via internal dip switches.
- Local Switch LS5 on IQ/MLC B controls motors 5-8 via internal dip switches.
- A/V System, with a dry contact or RS-485 interface, controls motors 1-7.
- Master Switches A & B control motors 1-7.



MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.28
MS2200 - 01/01/08



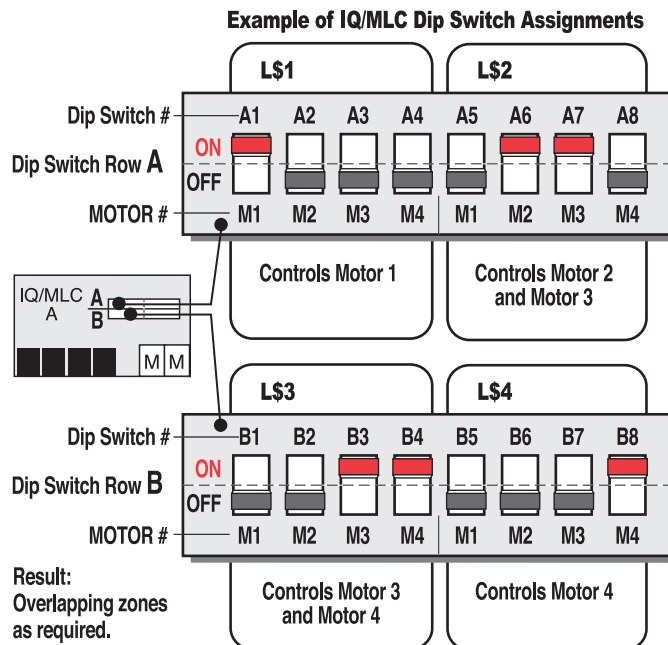
Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC™ – Features

IQ/MLC™ – Switch Management

4 zones – Each motor control zone is associated with a local switch port (L\$1, L\$2, L\$3 and L\$4)

Each local switch port may control any combination of 4 motors through the DIP Switch settings.

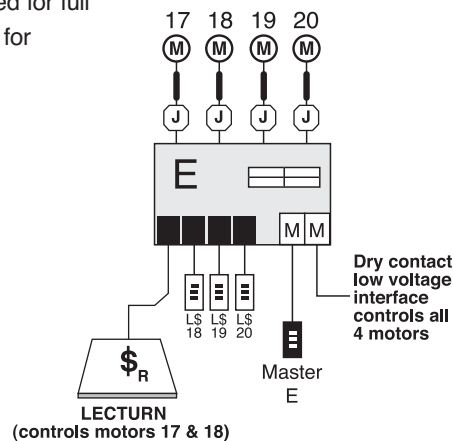


Low Voltage Interface for A/V Control:

Connect local or master switch ports to the optional IQ/MLC™

RS-232/485 interface or third party dry contact closures.

Three dry contact closure terminals are required for full operation of IQ/MLC. Two dry contact closures for up/down operation only.



Hardwired: Low Voltage Controls – IQ/MLC™

For A/V and Dimming Control Systems Integration with
Building Management Systems • Smart Homes • Home Theatre • Conference Rooms

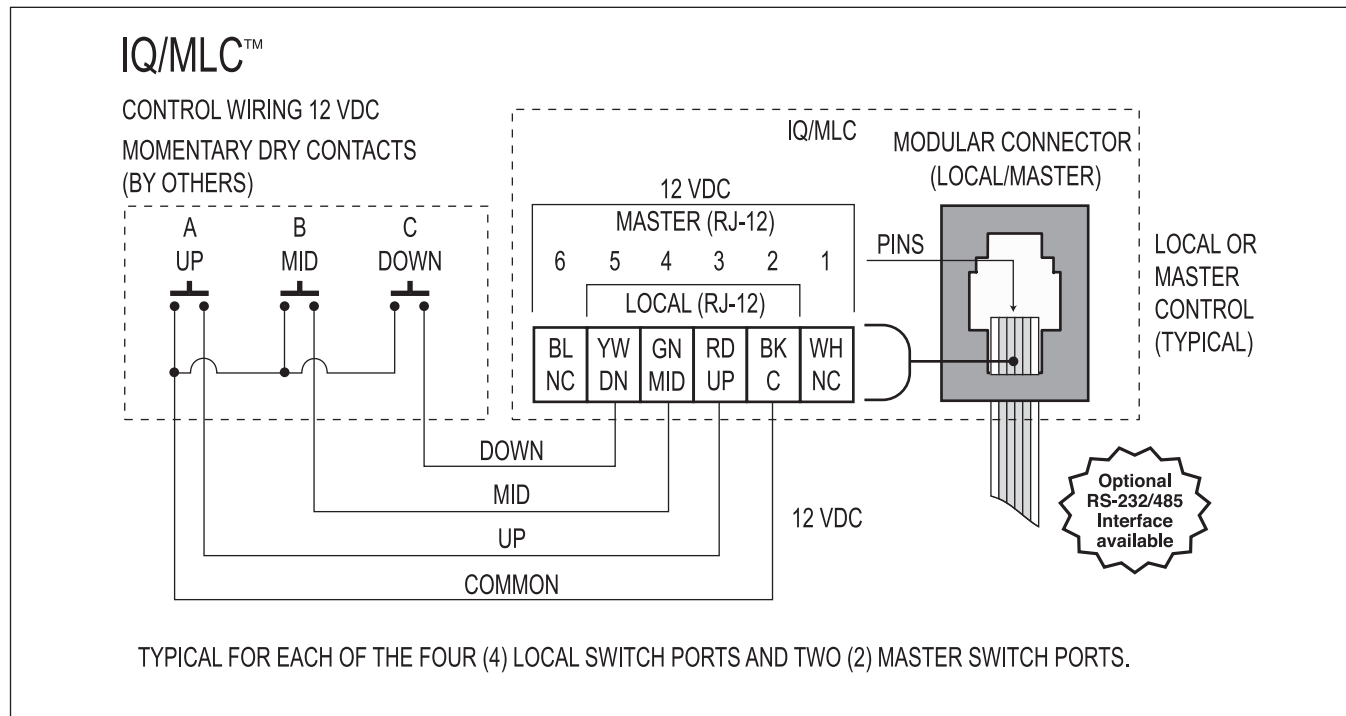
IQ/MLC™ WindowManagement® System for ElectroShades® using Dry Contact Closures

If UP, DOWN and 3 INTERMEDIATE Stop Positions are required:

- Provide three (3) low voltage, 12 VDC, 10mA momentary dry contacts, A (UP), B (MID POINT) and C (DOWN).
- To move the shades DOWN requires a momentary pulse of Contact C.
- To move the shades UP requires a momentary pulse of Contact A.
- To stop the shades while traveling, pulse either contacts A, B or C.
- To move the shades to Position 1 (25% down). Requires a momentary pulse of Contact A & B.
- To move the shades to Position 2 (50% down). Requires a momentary pulse of Contact B.
- To move the shades to Position 3 (75% down) Requires a momentary pulse of Contact B & C.
- Recommended momentary pulse length between 100 and 500 milliseconds.

If only UP and DOWN positions are required:

- Provide two (2) low voltage, 12 VDC, 10mA momentary dry contacts, A (UP), B (DOWN).
- To stop the shade while traveling; pulse either contact.
- To activate UP or DOWN, pulse either contact.



Continued 

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.30
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

For A/V and Dimming Control Systems applications for
Building Management Systems • Smart Homes • Home Theatre

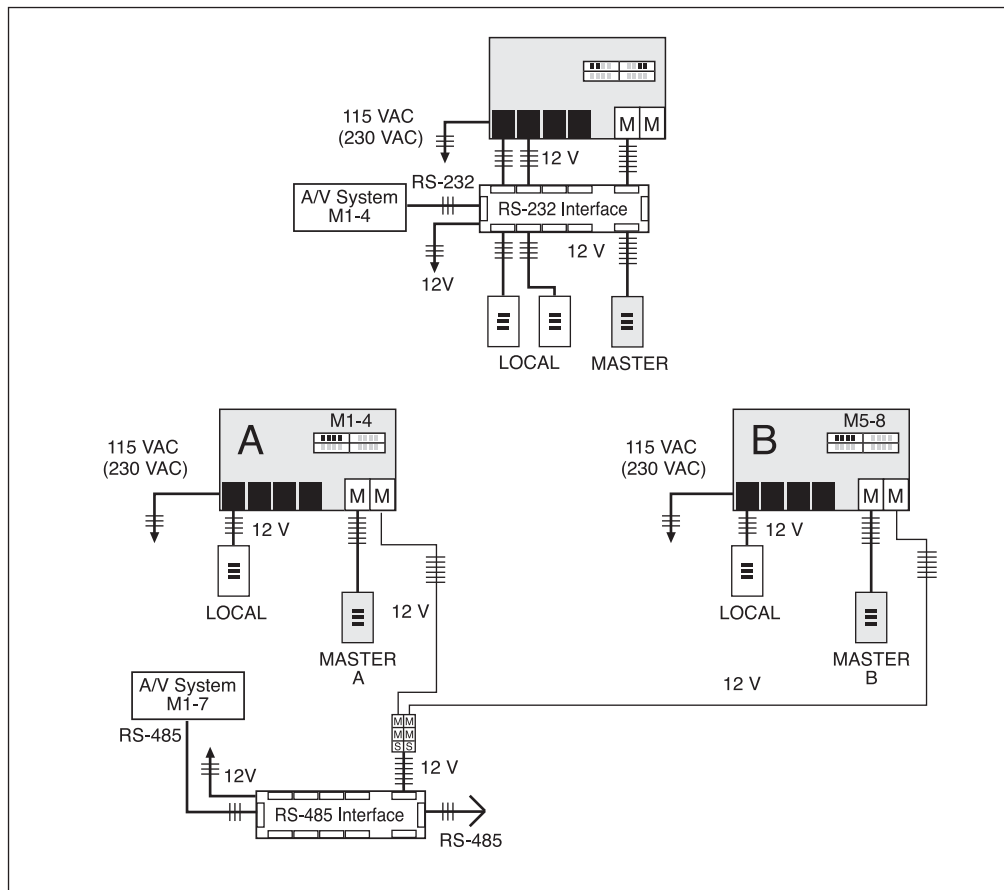
IQ/MLC™ WindowManagement® System for ElectroShades® using an RS-232/485 Interface

For control of a single IQ/MLC via RS-232:

- Use optional IQ/MLC RS-232 Interface EMLC 0232 RS MO.
- Connect the A/V System to the Communications Port on the RS-232 Interface using a modular cable connection.
- Connect the IQ/MLC Local Switch Ports #1-4 to Local Switches via the IN and OUT Ports #1-4 on the RS Interface. Either IQ/MLC Master Switch Port can connect to a Master Switch via IN and OUT Ports #5 on the RS Interface
- For POWER connect the RS-232 Interface to the IQ/MLC.

For control of multiple IQ/MLC's via RS-485:

- Use optional IQ/MLC RS-485 Interface EMLC 0485 RS MO.
- Follow the same procedure above for Master Ports and connect the Local Switches connect directly to the IQ/MLC as per the standard wiring diagram.
- Multiple IQ/MLC's can be connected to a single Master Port on the RS Interface via approved modular T or Y connectors.
- RS-485 Interfaces may be daisy chained together to form larger networks via the IN and OUT Communications Ports on the RS Interface.



Continued 

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.31
MS2200 - 01/01/08



Hardwired: Low Voltage Controls – IQ/MLC™

IQ/MLC Component Specifications

The IQ/MLC™ System consists of:

IQ/MLC Four Motor Logic Controller:

Low voltage four (4) motor controller for standard motors with local and master switch control capability. Dip switch assign motor switch assignments to form groups. Any of the four local switches can control any combination of the four motors connected to the IQ/MLC. Provides full up, full down and three intermediate and custom stop positions at the touch of a button for assured alignment. Additional IQ/MLCs can be wired in parallel or series. 17 VDC, 0.1A max per switch contact. Input: 120 VAC, 0.5A max; 240 VAC 0.25A max.

Output: 120 VAC, 3.8A max; 240 VAC, 1.9A max.

P/N: 120V: IMLC 120V ST SP; **230V:** IMLC 230V ST SP.

IQ/MLC Switch:

3-button single low voltage intelligent switch for local or master control provides full up, full down and three intermediate and custom stop positions at the touch of a button. Allows the user to calibrate the IQ/MLC and select between uniform and normal modes. Also available in 6-button zone double switch. (12V, 100 mA, max).

P/N: 3-Button: ESWX IQ03 _ _ _ _ ;

6-Button: ESWX IQ06 _ _ _ _ .

Optional Remote Control:

Full Up/Down operation in Normal Mode, or intermediate stop positions in the UniformMode™.

Accessory Controls (ACC):

Optional external inputs for security, life-safety, audio/visual and other applications. For example, Sun Activated Sensors, Seven-Day Timers or MechoShade's AAC SolarTrac™ computerized green-building management system.

IQ/MLC Accessory Interface: Interface for connecting

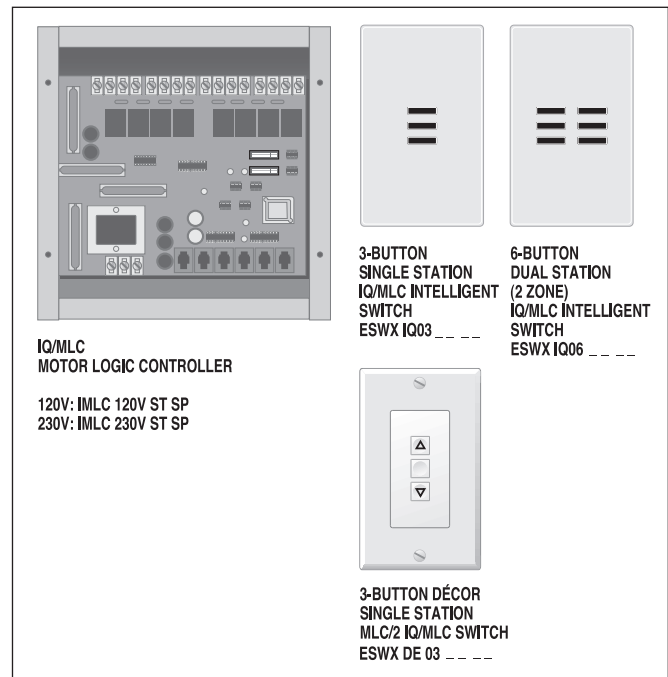
SACs and Timers. **P/N: 120V:** ESSA IQ115 STSP,

230V: ESSA IQ230 STSP

Modular Cable: 26 gauge, 6-conductor flat modular cable (stranded wire) available as uncrimped rolls or pre-crimped lengths.

Un-Crimped, 500 foot (16.6m) roll:	ESMC 0302 VL BE
Un-Crimped, 1,000 foot (333.3m) roll:	ESMC 0340 VL GR
Pre-Crimped, 2 feet (.6m) long:	ESMC 0341 VL BE
Pre-Crimped, 7 feet (2.3m) long:	ESMC 0278 VL BE
Pre-Crimped, 25 feet (8.3m) long:	ESMC 0313 VL BE
Pre-Crimped, 50 feet (16.6m) long:	ESMC 0343 VL BE

Modular T Adapter: Two 6-position / 6-contact female modular jacks with UTP cable. **P/N:** MODU 6POS 6C 2F



Modular Y Adapter: Two 6-position / 6-contact female modular jacks with UTP cable. **P/N:** YADP 6POS 6C 2F

Modular Cable Coupler: 6-position, one to one wiring pattern.

P/N: COUP 5050 AM P1

Modular Plug: 6-position, 6-contact RJ-12 plug.

P/N: RJ12 6CON 6P PL

Cable Tester: Siemon STM-8. **P/N:** ECAT SIEM ST M 8

Crimping Tool: Modular plugs are UL approved when terminated using this tool and procedures outlined in IS 408-9767. **P/N:** ETCO 1652 08 UL

Sub Group Controller: Six 6-position / 6-contact female modular jacks for connecting up to 4 I-CON controllers.

P/N: IQML SGC6 RJ BD

IQ/MLC RS232 & 485: RS485 protocol with a PC requires a 485 PC card or an 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.

RS232: **P/N:** EMLC 0232 RS MO (PC to 1st interface)

RS485: **P/N:** EMLC 0485 RS MO (interface 2 and up)



ElectroShade® Optional Low Voltage Control Accessories

Remote Control (Specify IR or RF)

MechoShade® offers a Remote Control line that provides motor control from a distance through the use of a hand held radio transmitter. Remote Controls are available as one, two, three or four motor controllers.

IQ/MLC™ utilizes IR remote only.

P/N: Single Channel: EIRC 0632 RA TR
Four Channel: EIRC 0633 RA TR



Single Channel



Four Channel

24-Hour Digital Timer

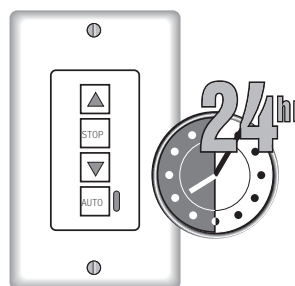
MechoShade offers a compact dual direction digital timer for carefree automatic control for ElectroShades. The 24-Hour Timer is easy to install and simple to program and will raise and lower your shades at different times of the day. Protecting the interior from solar impact.

IQ/MLC requires the SAC/TIMER Interface.

P/N: EDTI 0351 24 WH
EDTI 0352 24 CW

IQ/MLC SAC/Timer Interface:

120V P/N: ESSA IQ115 STSP
230V P/N: ESSA IQ230 STSP



Solar Activated Controllers (K-Lux)

MechoShade offers a line of Solar Activated Controllers (SACs) with sensors that continually monitor the solar brightness, triggering the control unit to extend or retract the shade. SACs are available for use with a single motor 3-motor Individual-Group Controllers (IGC), four motor IQ/MLC's and MLC four motor controllers.

IQ/MLC requires the SAC/TIMER Interface.

SAC with Photo Cell, Flush Mount, Single Motor:

P/N: ESSA 0901 ST WH • ESSA 0931 ST CW

SAC with Photo Cell and Switch:

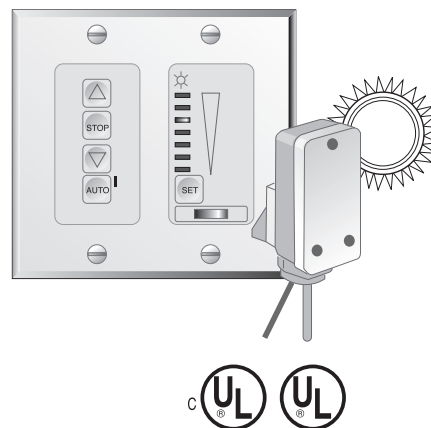
P/N: ESSA 0897 ST WH • ESSA 0927 ST CW

IQ/MLC SAC/Timer Interface:

120V P/N: ESSA IQ115 STSP
230V P/N: ESSA IQ230 STSP

Photo Cell Only:

P/N: ESPC 0313 PL WH



Continued

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.33
MS2200 - 01/01/08



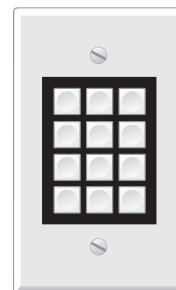
ElectroShade® Optional Low Voltage Control Accessories

Digital Key Pad

The “Keyless” programmable indoor security switch. Prevent unwarranted operation of shades with your personal code number through the Digital Key Pad. The four digit private entry code can be changed by the user to ensure limited access, or protection.

NOTE: Compatible with MLC™ and I-CON™ standard motor control systems. IQ/MLC™ and I-CON Intelligent Motor Control System for full up/down operation only.

P/N: ESDX 0739 IN WH



Key Switches

MechoShade offers a line of high-security Indoor Key switches.

They are available as:

- Light duty & heavy duty designs
- White or ivory cover plates
- Maintained or momentary switches

NOTE: Compatible with MLC and I-CON standard motor control systems. Momentary Switches compatible with Intelligent Motor Control System for full up/down operation only.



Maintained P/N: ESWX RYMA PS CW

Momentary P/N: ESWX RYMO PS CW

Miscellaneous Switches

Line or Low Voltage



DECORATOR
PADDLE SWITCHES
(DPDT)

MAINTAINED
ESWX 0728 ST WH
ESWX 0729 ST CW

MOMENTARY
ESWX 0735 ST WH
ESWX 0734 ST CW

(SWITCHPLATE
SOLD SEPARATELY)



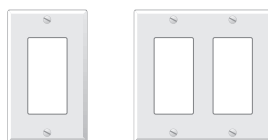
ROCKER SWITCHES
WITH PRINCESS
PLATE

MAINTAINED
ESWX 0688 PS WH
ESWX 1441 PS CW

MOMENTARY
ESWX 0689 PS WH
ESWX 1551 PS CW

(SWITCHPLATE
INCLUDED)

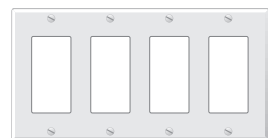
Décor & Paddle Switchplates



1 GANG: ESWP 0123 ST WH
2 GANG: ESWP 0128 ST WH



3 GANG:
E WP 0133 ST WH



4 GANG: ESWP 0138 ST WH

IQ/MLC Standard Switches



3-BUTTON
SINGLE STATION
IQ/MLC STANDARD
SWITCHES
ESWX IQ03 _ _ _



6-BUTTON
DUAL STATION
IQ/MLC STANDARD
SWITCHES FOR A
SINGLE GANG BOX
ESWX IQ06 _ _ _



3-BUTTON DÉCOR
SINGLE STATION
IQ/MLC SWITCH
ESWX DE03 _ _ _



6-BUTTON DÉCOR
DUAL STATION
IQ/MLC SWITCH
ESWX DE06 _ _ _

MechoShade Systems, Inc.
42-03 35th Street, Long Island City, NY 11101
Telephone: 718-729-2020
Fax: 718-729-2941 / 800-899-8081

E-mail: info@mechoshade.com
Internet Web Site: <http://www.mechoshade.com>

4.34

MS2200 - 01/01/08

