Low Voltage Control (Hardwired)

**MLC™**

**Features:**
- Master Control for 4 standard line voltage tubular motors
- Full UP/Full DOWN Control w/ Supervised Mid-Window Positioning
- Daisy chain to orchestrate master control on up to 100 motors
- Variety of Automation Sensor Interfaces
- Dry Contact Integration into Lighting and other 3rd Party Control Systems

**Description**

The MLC offers enhanced functionality over Line Voltage Switch controls by providing master control of large groups of motors while also enabling the integration of low voltage sensors, timers and third party control systems for higher level functionality. The device is designed to accommodate cost conscious applications involving the simultaneous movement of multiple shades where shade operation is typically full up/full down while mid-window positioning and guaranteed alignment is not a driving concern. Blackout shades for A/V conference rooms often require this type of operation. These controllers are best suited for renovation/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.

**Detail**

MechoShade’s MLC is a cost effective, low voltage controller offering master control of four (4) standard, line voltage motors (120/240 VAC, 50/60 Hz). The device is equipped with a low voltage control network that enables the positioning of motors in an UP/DOWN fashion with supervised mid-window positioning from either a single maintained-contact switch or multiple momentary center-off switches and/or low voltage accessories (ie. automation sensors, timers, remote controls, etc.).

Up to 25 MLCs (100 motors) can be daisychained over the low voltage network to operate from a single switch connection. MechoShade offers a variety of maintained-contact and momentary center-off switches in a wide range of colors and styles to accommodate virtually any décor. In addition, the MLC can operate with a variety of third party contact closure switches and controls supporting seamless integration into Lighting, HVAC, A/V and Building Management Systems (BMS).

MLCs provide control and power distribution functionality for the four (4) non-proprietary, line voltage motors they operate. Each motor is wired directly to its own dedicated set of fused power connections. The internal circuitry protects each motor and ensures the maximum lifetime out of the shade motor and the system. The low voltage control network (12 VAC) offers a cost effective opportunity to extend the control of the motors through contact closure devices into multiple locations and multiple sources. Control switches and low voltage accessories wire directly to the MLC input in a hardwired fashion for ease of troubleshooting.

The 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.
MLC – Features and Benefits

Low voltage switching for standard motors using a four (4) motor Motor Logic Controller™ (MLC™).

MLC – Line Motor Controller™ (MLC™)

MechoShade’s® economical, low voltage four motor controller offers master control for up to four motors on either one maintained switch or multiple momentary, center-off switches. Up to 100 motors may be wired together on a single switch circuit by daisy chaining MLC’s. Shade operation is by UP/DOWN switch activation with mid-window settings accomplished in a supervised fashion.

MLCs may be used to incorporate:

- Solar-activated control.
- Remote control (IR/RF).
- A low voltage interface with A/V and dimming systems.

Integration with Third Party Controls (i.e. Lighting, HVAC, A/V for Home Automation, and Building Management Systems.) (See page 4.29.)

MLC™ (Motor Logic Controller) using Dry Contact Closures

- Provide two (2), 12 VAC, maintained dry contacts.
- To activate the shades, provide a maintained contact closure for the shades to move.
- The shades will continue to move until they reach their internal limit switches or are otherwise stopped by opening the contacts.
- Master switching only.
Typical MLC Applications

MLC™ with standard motors for single and multibanded shades

**MASTER CONTROL ONLY**

a) Master Switch A controls motors 1-4 simultaneously.

b) A/V System, with a dry contact interface, controls motors 1-4 simultaneously.

**MASTER CONTROL ONLY** (UNLESS WIRED AS TWO SEPARATE MLC’s EACH WITH ITS OWN SWITCH)

a) Master Switch A controls motors 1-7 simultaneously.

b) A/V System, with a dry contact interface, controls motors 1-7 simultaneously.
MLC – Wiring Diagram

Low voltage switching for one to four standard type motors on one switch using an MLC™ four motor controller.

Note: Drawings are incomplete unless both pages of this Wiring Diagram, 4.17 – 4.18, plus the Electrical Notes pages 4.49 – 4.51 are included.
How to connect two or more four (4) motor MLC™ Motor Logic Controllers having five or more standard type motors on one switch.

Note:
Drawings are incomplete unless both pages of this Wiring Diagram, 4.17 – 4.18, plus the Electrical Notes pages 4.49 – 4.51 are included.
**MLC System Summary**

The MLC System consists of:

**MLC Four Motor Controller.**
Low voltage four (4) motor controller for standard motors with master switch control capability. Additional MLC control circuits can be wired in parallel or series. 12 VAC, 0.3A per switch. Input: 120 VAC, 0.5A; 240 VAC, 0.25A. Output: 120 VAC, 3.8A max.; 240 VAC, 1.9A max.

**P/N:**
- 120V: EMLC SLMA ST SP
- 230V: EMLC SLSP ST SP

**MLC Switch**
Double pole, double throw momentary or maintained rocker switch for master control switching. Full up/full down or anywhere in between shade positioning through activation of the switch and supervised mid-window positioning is capable. (12V)

**Maintained P/N:**
- ESWX 0688 PS WH
- ESWX 1441 PS CW

**Momentary P/N:**
- ESWX 0689 PS WH
- ESWX 1551 PS CW

Please see Page 4.34 for a complete listing of Switches.

---

**Accessory Controls**

- Lighting Controls
- A/V
- Solar Activated Timers (SAC)
- Seven-Day Timers
- AAC – SolarTrac™

Please see pages 4.33-4.34 and 4.44 for details.

---

**Solar Activated Controller (SAC)**

- SAC w/Photo Cell P/N: ESSA 0901 ST WH
- ESSA 0901 ST CW
- SAC w/Photo Cell and Switch P/N:
  - ESSA 0897 ST WH
  - ESSA 0927 ST CW
- Photo Cell Only P/N: ESPC 0313 PL WH

---

**MLC Motor Logic Controller**

- FOR MASTER CONTROL OF UP TO 4 MOTORS PER MLC (EACH MLC MAY BE DAISY CHAINED)

**24-Hour Digital Timer**

- P/N: EDTI0351 24 WH
- EDTI0352 24 CW

---

**Key Switch**

- Maintained P/N: ESWX RYMA PS CW
- Momentary P/N: ESWX RYMO PS CW

---

Please see Page 4.34 for a complete listing of Switches.