TOUCHBOLT™ SWITCH ELCML-3

The ELCML-3 touch controller is an electrical module designed to provide on/off control of two independent lighting circuits by means of a touch sensitive input. In addition to the touch-control input, two low voltage override control inputs are provided which can be used to give forced-on and forced-off control of the lighting circuits.

The ELCML-3 utilizes relays to provide fully isolated control of two lighting circuits, offering maximum immunity to false triggering, which might otherwise occur as a result of electrical noise from electronic lighting ballasts and other non-linear loads. Form-C (SPDT) contacts are provided for each circuit to give the installer maximum connection flexibility.

The module includes a 3-position DIP switch which is used to program the controller for one of four different on/off control sequences, and to enable an optional "time-off" feature which automatically forces both lighting circuits to turn off after a configured time delay (0.5sec, 1 sec, 5 sec and 15 sec). The touch controller is activated by a signal from a stainless-steel bolt. These Touchbolt™ Assemblies can be ordered in various lengths and configurations to support fixture-mount or wall-mount control.

The touch input can be one bolt for two-way or two bolts for three-way operation.

INSTALLATION CONSIDERATIONS

Stranded copper wire—#18 AWG is recommend for the active touch-sense connection from the touchbolt assembly.

Maximum total distances between the touch controller and the Touchbolt™ Assembly is 20 feet. In three-way applications the total combined length of both touch leads must not exceed 20 feet. Touch-sense must be run in non-metallic conduit. Through-wall penetrations must be run in PVC conduit. Touch lead cannot be run with power leads or next to large moving metal objects such as HVAC duct.

Do not run touch leads from 2 or more units in close proximity to each other or in the same non-metallic conduit. A test mock-up of complex install configurations is recommended prior to proceeding to confirm correct functionality.

When installing in lights fixtures, keep touch lead away from AC or ballast output wires.

MECHANICAL

Nominal Dimension

See Diagram on page 2

Terminal Assignment

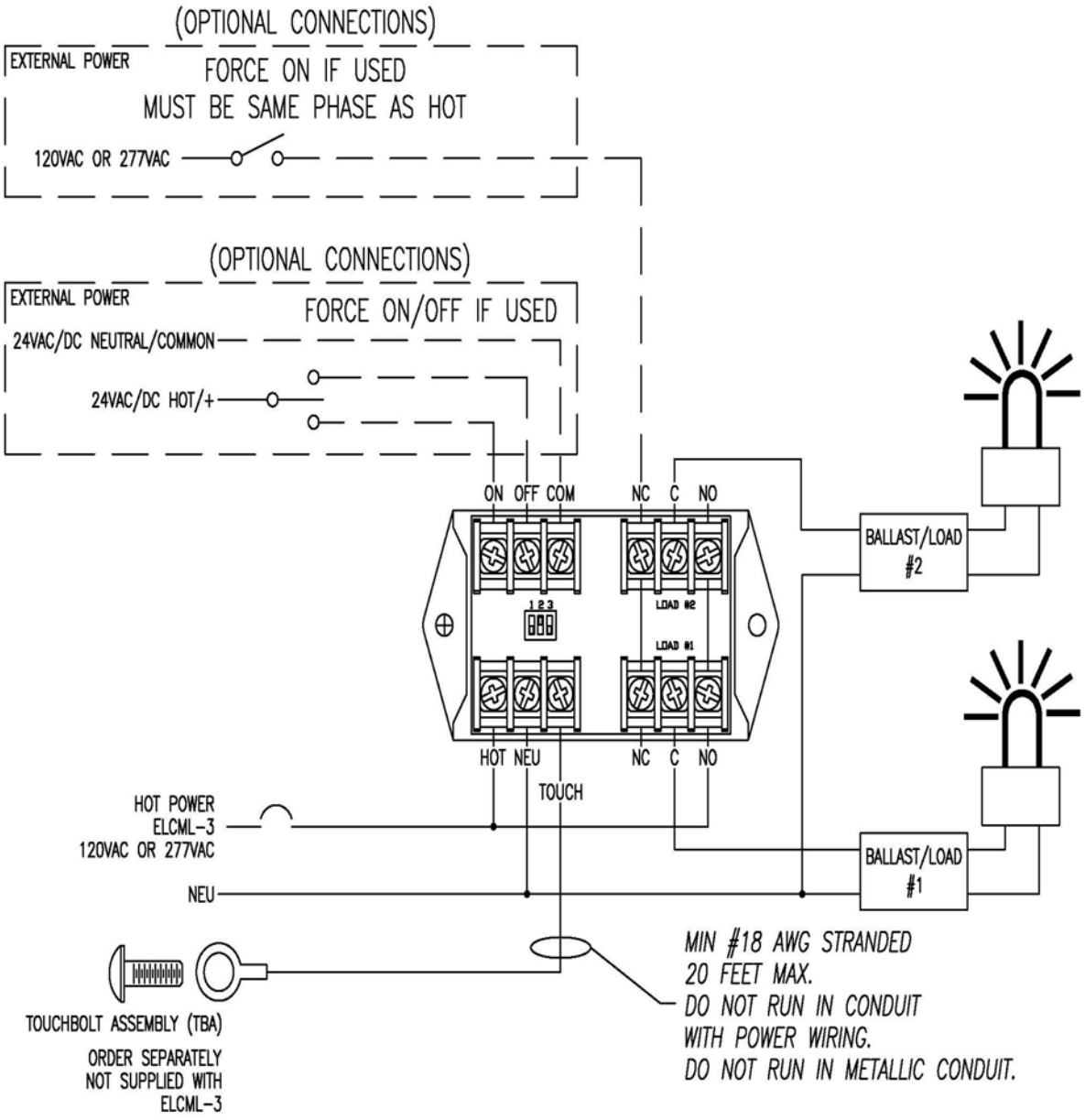
See Diagram on page 2

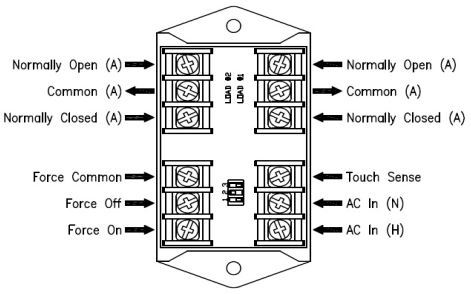
Wiring Considerations

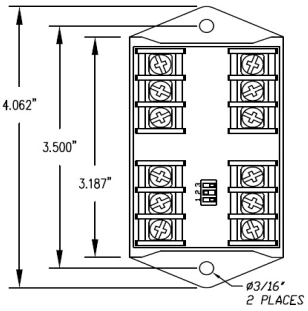
All screw terminals provided are rated for use with wire sizes in the range of #12-22 AWG only. Use only solid or stranded copper wire for all terminal connections. Risk of fire may result from use of aluminum wire or wire size outside the specified range. Select actual wire size in accordance with applicable code.

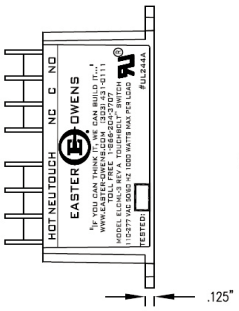
Operations

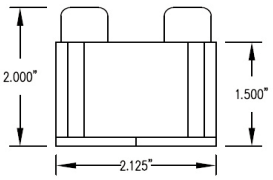
Number of operations under rated electrical load is 200,000 minimum.


(OPTIONAL CONNECTIONS)
EXTERNAL POWER
FORCE ON IF USED
MUST BE SAME PHASE AS HOT
120VAC OR 277VAC
(OPTIONAL CONNECTIONS)
EXTERNAL POWER
FORCE ON/OFF IF USED
24VAC/DC NEUTRAL/COMMON
24VAC/DC HOT/+
ON OFF COM
NC C NO
1 2 3
LOAD #2
LOAD #1
HOT NEU
NC C NO
TOUCH
BALLAST/LOAD #2
BALLAST/LOAD #1
HOT POWER
ELCML-3
120VAC OR 277VAC
NEU
TOUCHBOLT ASSEMBLY (TBA)
ORDER SEPARATELY
NOT SUPPLIED WITH
ELCML-3
MIN #18 AWG STRANDED
20 FEET MAX.
DO NOT RUN IN CONDUIT
WITH POWER WIRING.
DO NOT RUN IN METALLIC CONDUIT.


Normally Open (A)
Common (A)
Normally Closed (A)
Force Common
Force Off
Force On
Normally Open (A)
Common (A)
Normally Closed (A)
Touch Sense
AC In (N)
AC In (H)


4.062"
3.500"
3.187"
Ø3/16"
2 PLACES

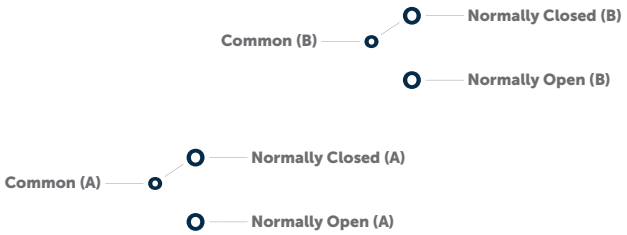

HOT NEU TOUCH NC C NO
EASTER OWENS
.125"


2.000"
1.500"
2.125"

ELECTRICAL

AC Power Input

The AC(N) and AC(H) terminals are used to provide power to operate the touch controller. The AC(N) terminal also provides electrical earth reference to the touch-sensing input. AC power must be applied at all times for proper controller operation. Connect AC(N) to line neutral and AC(H) to line hot. Reversing these connections may result in poor noise immunity on the Touchbolt™ input and will increase susceptibility to false triggering.



Relay Contacts

The ELCML-3 touch controller provides two independent sets of Form-C (SPDT) relay contacts for control of up to two lighting circuits. Each set of relay contacts is electrically isolated from the other, from all control inputs, and from the AC power input.

When AC power is first applied to the controller, both relays are reset to the default state in which C-to-NC contacts are closed and C-to-NO contacts are open. Activation of the touch-sense control input initiates change to the subsequent state of each relay. The DIP switch settings are used to establish the desired on/off sequences of the relays. See sequence of operations chart.

Removal of AC input power does NOT automatically reset the relays to the default state in which C-to-NC contacts are closed and C-to-NO contacts are open. AC power must be applied at all times for proper controller operation.

Touchbolt™ Control Input

Easter-Owens' Touchbolt™ Assemblies were designed for use with the ELCML-3.

The touch input of the ELCML-3 is sensitive to rapid changes in capacitance. It employs a time-averaging algorithm to filter out random electrical disturbances. Additionally, an adaptive biasing scheme is used to accommodate gradual changes in capacitance without causing false triggering. The controller requires no field calibration and is equally suitable for connection to a wide range of touch surfaces without degradation of performance. The controller provides high noise immunity while maintaining accurate touch response.

The touch input is internally protected against damage caused by electrostatic discharge (ESD) for air discharge levels up to + 15KV as specified by IEC 1000-4-2.

Force-On/Force-Off Control Inputs

Force-on and Force-off control inputs are provided to give positive turn-on and turn-off control of both relay circuits. Activation of the Force-on control input overrides the touch-sense control input and places both relays in the "on" state whereby C-to-NO contacts are closed and C-to-NC contacts are open. Activation of touch-sense control input and places both contacts closed and C-to-NO contacts open. The controller relays remain in the forced state as long as the appropriate Force input is applied; the controller resumes normal operation upon removal of the Force input signal, returning both relays to the state(s) present prior to Force-on or Force-off input signal, returning both relays to the state(s) present prior to Force-on or Force-off activation. If both control inputs are activated simultaneously, the Force-off input is given priority and the controller places both relays in the "off" state.

Each force control input is activated by applying 24VAC (50/60HZ) or 24VDC between the desired FORCE terminal and the FORCE COMMON terminal for a minimum activation time period. Electrical specifications are given to the right.

FORCE ON/OFF PARAMETERS	MIN	TYPE	MAX	UNITS
Control input voltage level (each input)	15	24	33	Volts (rms or DC)
Control input voltage freq (if AC)	9	60	62	Hertz
Control input current (each input)	-	-	3	Miliamperes
Control signal duration (each input)	40	-	-	Milliseconds
Dead time required between force control activation	1	-	-	Seconds

Note: The Force-on and Force-off control inputs become inactive and will NOT affect relay states if AC input power is removed. AC power must be applied at all times for proper controller operation.

Next-Cycle Delay

When the touch-sense control input is first activated, the controller advances the relays to the next sequence state. The input is then internally disabled for a period of one second. During this delay, subsequent activation of the touch-sense input will have no effect. After the delay period expires, controller operation resumes to normal. This built-in delay is designed to discourage rapid re-activation of the controller and repeatedly changing from one state to the next.

Time-Out Delay

The ELCML-3 touch controller can be set for the time-delayed turn-off. In this mode, the controller's two relay outputs act in responding to the touch-sense control input. After the last touch control activation, the outputs will then return to the default "off" state after a delay period of 0.5, 2, 5 or 15 seconds as configured via the DIP switch settings. See next page for switch setting details.

ENVIRONMENTAL

Touchbolt™ modules are not limited to lighting applications. Please call factory for further information.

PARAMETER	VALUE	UNITS
Operating Temperature	0 to +65	Degrees Celsius
Storage Temperature	-40 to +85	Degrees Celsius
Operating Humidity	0 to 99	%RH non-condensing
Storage Humidity	0 to 99	%RH non-condensing

APPROVALS

The ELCML-3 are UL recognized components complying with UL safety standard UL244A for solid-state controls for appliances.

DIP SWITCH SETTINGS

A three-position DIP switch is used to set the ELCML-3 touch controller operation mode. The first two positions, SW1 and SW2, are used to select the desired state sequence of relays A and B when the third position SW3 is off. When SW3 is on, SW1 and SW2 are used to select the desired time-out delay. See chart below:

SEQUENCE OF OPERATION CHART

VIEW	SW1	SW2	SW3	TOUCH 1	TOUCH 2	TOUCH 3	TOUCH 4	TOUCH 5	TIME-OUT PERIOD
	OFF	OFF	OFF	**A** ON | **B** OFF	**A** OFF | **B** ON	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat	None
	ON	OFF	OFF	**A** ON | **B** OFF	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat		None
	OFF	ON	OFF	**A** ON | **B** OFF	**A** OFF | **B** ON	**A** OFF | **B** OFF	Repeat		None
	ON	ON	OFF	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat			None
	OFF	OFF	ON	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat			0.5 Seconds
	ON	OFF	ON	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat			2 Seconds
	OFF	ON	ON	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat			5 Seconds
	ON	ON	ON	**A** ON | **B** ON	**A** OFF | **B** OFF	Repeat			15 Seconds

ORDERING INFORMATION

For ELCML-3. All other inquiries, please consult the factory. Don't forget to order the appropriate Touchbolt™ Assembly for your specific project.

Model No.	Voltage	Stock #
ELCML-3	110-277 VAC	503120

HEADQUARTERS

6692 Fig Street
Arvada, Co 80004

Phone: 303.431.0111
Fax: 303.424.2040

EASTER-OWENS.COM

CONTACT US FOR PROJECT REFERENCE INFORMATION

CALL TOLL FREE: **1.866.204.3707**