

Model CX1100 Controller Electrical Specifications

General Description: PCB level controller powered by AC or DC source and delivering custom power waveform to the inductive load shutter. Features many safety functions and LED annunciators, including: shutter open, power on, armed condition, manual toggle control terminals, reset switch terminals, remote input control, auxiliary 5 VDC, and interlock connections.

Intended Use: Where moderate speed switching performance is needed, on most shutter models. Can drive all safety/process shutters and some modulation shutters.

Calibration: Unit is factory set via trim-pots for use with a particular shutter model, and in the case of large optic shutters, calibrated additionally for gravity affects. Label on product denotes mating shutter model.

Shutter Compatibility: Nearly all of our shutters can be driven with the CX1100, with exception of the LS200, LS500, LS055, and some custom items. With higher performance shutters, the ultimate switching and repetition rate specs usually are compromised due to lower voltages used by the CX1100.

OEM Considerations: The PCB integrates well into OEM machines. Standard unit is powered from 110 or 220 VAC, using transformer/bridge/cap DC generation. An option is the DC driven unit, using suffix –24VT. The nominal 24 VDC supply is common to many machines. Terminals are screw type for stripped wires, nominally 18-24 g.

Electrical Safety Issues: The standard unit operates from AC line, 100/110 or 220, using taps. Care should be taken to isolate the board from personnel during operation. With the –24VT suffix, elimination of AC voltages makes electrical safety certification in systems much easier. Nominal voltage in use is 24-28 VDC. Board ground can be connected to earth ground, or can float. The 5V – terminal is a convenient ground connection.

Input Drive Signal & Connections: The input control signal can be TTL to 24 VDC. Positive polarity opens the shutter. The current path is a 2.0 K Ohm limiting resistor through an opto-isolater LED with a 1 V drop. Users should make sure the control signal can source appropriate current. For TTL this is about 1.5 mA. For 24 V, such as from a PLC, the current would be about 11 mA.

Output Power and Connections: The output power is an inductive load waveform. Nominally 24-28 V is applied to the load for timed period of 1 to 50 msec, then PWM activity lowers the hold voltage to a long term level, typically 5-15 V. The shutter inductor is not part of the switching circuit, only an inductive load.

Power – Up Considerations: The use of a transformer based rectifier naturally controls the surge of current into the board's capacitor banks. If using the –24 VT option, plan to accommodate initial turn-on current surge with adequate capacity from your power supply.

Line Voltage Considerations: Specify line voltage when ordering. The taps are set, and the board is labeled. This can be field changed.

Nominal Power Source	100/110 or 220 VAC, 24-28 VDC option
Fusing	3AG type Slo-Blo, typically 1 A
Auxiliary Voltage Available	5.0 VDC at 30 mA (not current limited)
Physical Mounting	Five Clearance Holes, 0.156" dia.
Size	2 x 4 x 9 inches
Weight	1.5 lbs. (9 Oz with –24 VT option)

Operational Connections and Procedures:

Mount PCB with minimum 0.25 inch standoffs on board bottom. Keep standoff, washer, and screw head diameters within limits to avoid contacting traces on board. The silkscreen and labeling on the board should be carefully examined, especially for polarity markings. Connection descriptions follow:

LED S	Shutter LED, illuminates when shutter is energized, current limiting resistor on board.
SHUTTER	Power waveform delivered to shutter, polarized.
TBLOCK	Terminal Block interlock connection to any switch, seeking continuity to operate. Typically a door switch, panel switch, that is normally open. This can be jumpered if an interlock feature is not desired.
LED PW	Power on LED. Indicates there is power to the board. Current limited.
LED AR	Armed condition LED. Current limited. Indicates the TBLOCK interlock is conducting and the RESET switch terminals have been momentarily or long term contacted. Shutter can now receive power.
DRIVE	Signal used to open/close shutter. Typically this is TTL, but up to 24 VDC. Input impedance is 2.0 K ohms. Armed LED must be lit for the DRIVE to operate.
5 VDC	Auxiliary Source of 5 V power at 30 mA max, typically used to drive logic level position sensors on some shutter models.
SWITCH	Two terminals, when contacted supply internal 12 VDC to drive input, to open shutter. Use any mechanical switch, such as a toggle. Do Not use any external voltage.
PUSH	A contact closure, momentary with a pushbutton switch is typical, to open a relay and activate the armed condition. This is the Reset function. It must be performed each time board power is lost or the TBLOCK connection loses continuity. Jumper it if you do not wish to reset routinely, such as in a remote location.

Make sure shutter being used is same as the label on CX1100 stating "For LSxxxx".
Connect shutter, observing polarity. Make sure shutter is thermally mounted. Apply power source.
Close TBLOCK connection. Momentary contact close or permanently jumper PUSH reset terminals.
Now apply signal to DRIVE or close SWITCH contacts. Shutter will open as commanded.