LC3X APPLICATION NOTE

3 SCENE DIMMING SYSTEM PRESET

A windowless restaurant is using its dimming system to create different scenes throughout the day. At lunch, the lights are set to scenes with higher ambient illumination. Then, as the day proceeds, the dimming system is set to create an atmosphere appropriate for an after work or early dinner scene. Finally, the light level is further dimmed to provide a more intimate dining atmosphere. These three scenes are controlled using a **PLC-Multipoint LC3X** controller in a contrast lighting mode. The **LC3X** monitors lighting outside the restaurant using a **PD5** sensor. Each of the three scenes is triggered by its setpoint on the **LC3X.**

The controller's relay output can be used in one of several different ways in order make it compatible with the dimming system:

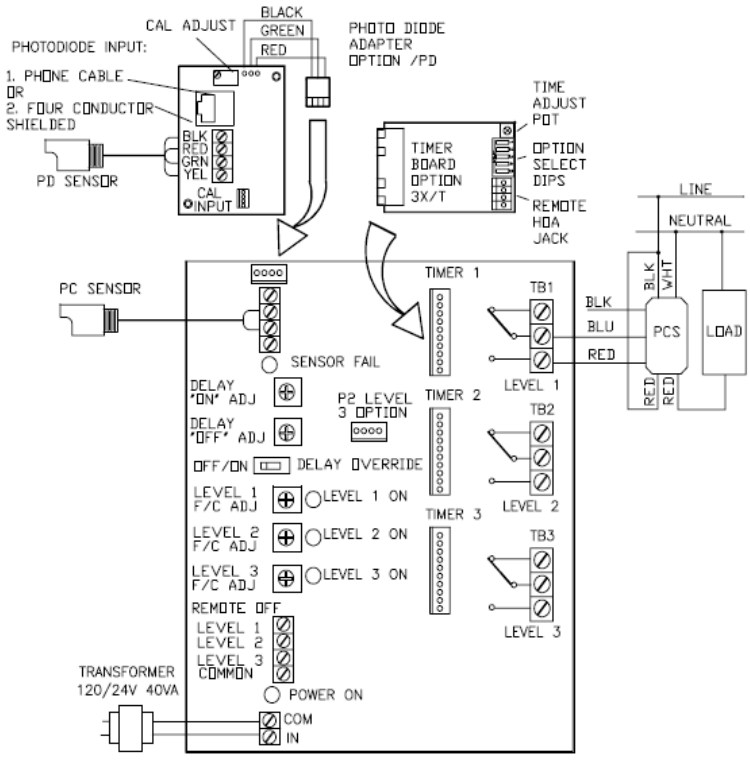
Method 1) The **LC3X** outputs can directly drive dimming system inputs. The normally closed contacts of the **LC3X** are wired into a dimming system preset. The dimming system sets the appropriate level with a combination of several maintained contact closures.

Method 2) The **LC3X** outputs are combined with relays to select one of three inputs to the dimming system. Unlike the previous method, the dimming system sees only one of the maintained signal inputs at a time.

Method 3) The **LC3X**'s 3 outputs are split into separate momentary ON and OFF signals using a **PLC-Multipoint PLS2** pulse converter. Using this method, a higher level OFF signal is tied to the next lower level ON signal to provide seamless control.

The reason for using the **LC3X** as a dimming system preset is threefold. First, at peak activity of the day, a restaurant manager responsible for changing the scenes may be too busy to manually set the dimming system. The **LC3X** does this change automatically. Secondly, in a high labor turnover industry such as food service, new technology required to adjust the dimming system places additional demands on managers. Third, seasonal differences of daylight shift the time of day when dimming system changes are required.

The **LC3X** can be used with systems that supply 24VAC as an integrated component in Method 1. For those dimming systems that require the isolating relays or pulsed inputs shown in methods 2 & 3, the **LC3X** is incorporated into a control panel.



LC3X SCHEMATIC

OPTION

The **LC3X** accepts up to 3 plug-in timers which may be installed at anytime. The timer extends the life of HID lamps by holding lights ON or OFF to prevent frequent cycling. The timer can be set to one of several ranges and adjusted to a specific value within the range. The **Photodiode** adaptor card can expand the **LC3X** into a linear system with remote calibration for applications requiring a greater operating range up to 10,000 footcandles. Sensor selection is based on the range required for the application.

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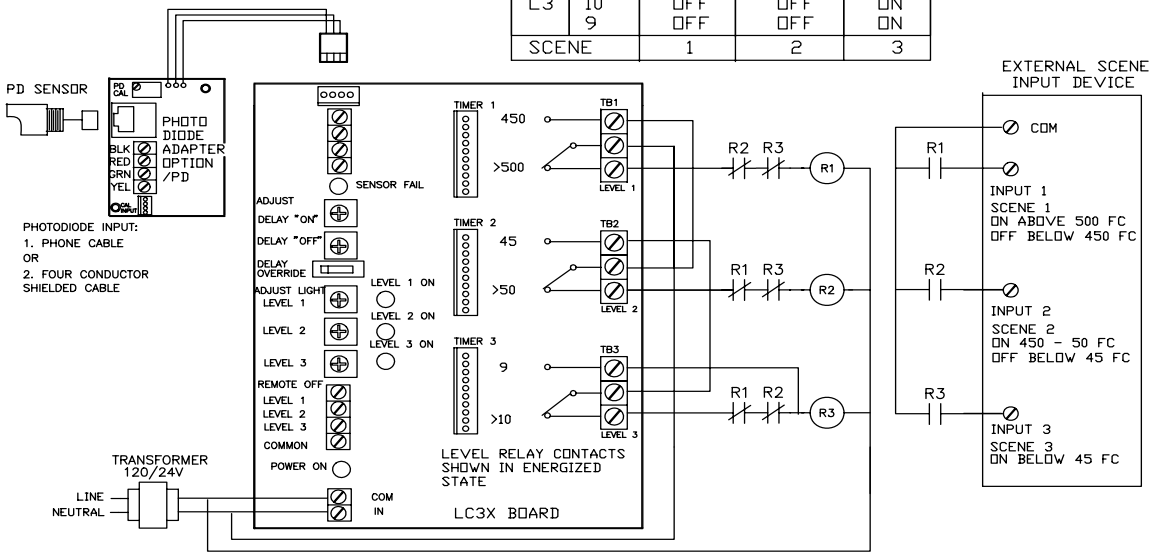
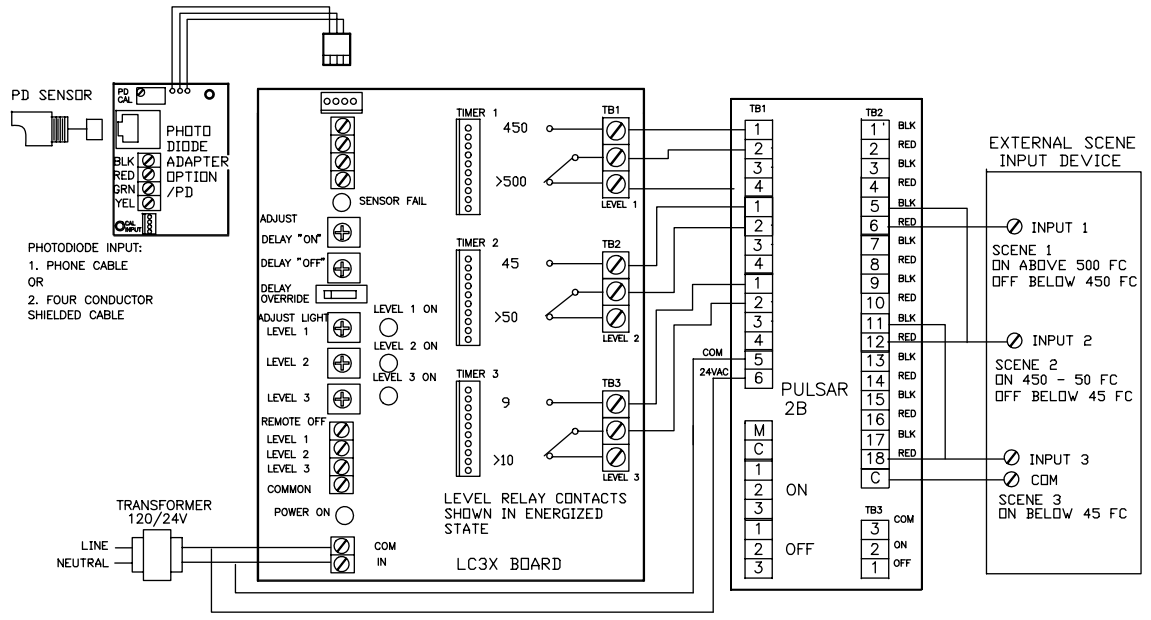
LC3X LVL	FC	STATE OF RELAYS R1	R2	R3
L1	500 450	ON OFF	OFF ON	OFF OFF
L2	50 45	OFF OFF	ON OFF	OFF ON
L3	10 9	OFF OFF	OFF OFF	ON ON
SCENE		1	2	3



METHOD 1: SEE LC3X DATA SHEET SCHEMATIC
METHOD 2: MAINTAINED INPUT FOR 1 OF 3 SELECTIONS



METHOD 3: PULSED INPUT

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LC3X-S STANDARD SYSTEM APPLICATION NOTE

HIGH SCHOOL GYMNASIUM

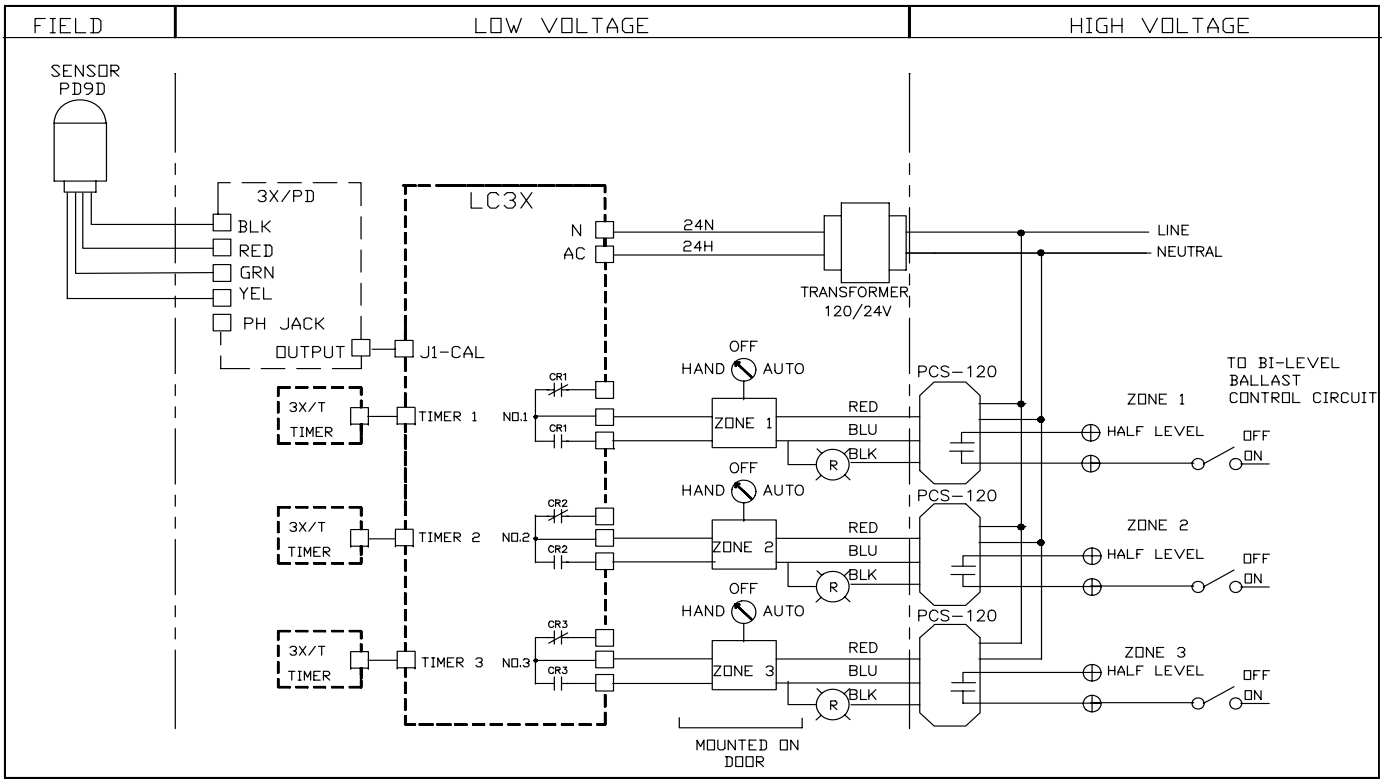
A high school gymnasium had a stepped roof with vertical windows along the sides, allowing daylight to enter. Three separate zones in the gymnasium each had different minimum light levels to maintain. High intensity discharge lighting using bi-level ballasts were located in each of the three zones.

The **LC3X-S** standard system was utilized to perform the daylighting control. The standard lighting control panel consisted of an **LC3X** three level control board . A single **PD9** atrium photodiode sensor provided the low voltage light level signal to the **LC3X** controller. The **PD9** sensor was mounted looking up at the base of the atrium. The atrium roof's partial shading during the day kept direct illumination below 1000 FC. A **3X/PD** photodiode adaptor was required to mate the **PD9** photodiode sensor to the master **LC3X** control board and to provide for the sensor's range calibration.

When the light level rose above each setpoint, that channel's bi-level ballasts were switched from full to half output level. When the light level fell again below the deadband, the lights were turned on again to full level. The switching was tempered by two timers: the built in input time delay set for 7 minutes, that prevented the controller from switching on passing clouds, and each output's hold on timer, keeping the lights on for set time at the high level.

Three remote AUTO-OFF wall switches were installed, providing each of the three zones with local override capability. The panel also provided master ON-OFF-AUTO selector switches for each of the controlled channels.

The **LC3X-S** standard control panel was housed in a NEMA 1 enclosure. The output relay contacts were brought to cage clamp terminal blocks for easy field termination. The entire panel is ETL tested and certified to ANSI/UL 508.



LC3X STANDARD SYSTEM

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PANEL FEATURE EXAMPLES

LC3X CONTROLLER - SKYLIGHT/WAREHOUSE

BASIC LC3X-E/120-PC5A	STANDARD LC3X-S	CUSTOM LC3X CUSTOM
Multiple Zone Interface to building Automation, Powerline Carrier, Low Volt, Panel	Upgrade include outputs for existing contactors, front door overrides & lights, input for time-clock, more precise sensor	Complete system includes industrial panel & display, time-clock, digital meters and contactors

FEATURES

ETL approved Photo conductive skylight sensor 120/24VAC 40VA transformer 12”H x 12”W x 4”D NEMA1 3 setpoints fixed 10% deadband Override on board 3 Form C pilot relay	ETL approved Photo conductive skylight sensor with adaptor 120 or 277/24VAC 40VA transformer 16”H x 16”W x 6”D NEMA1 3 setpoints fixed 10% deadband Door mounted HOA override 3 PCS/120 20A load relays Optional - 3#3X/T Hold-On-Timer 3 small LED indicators Terminal Block for optional time-clock	ETL approved Photo conductive skylight sensor with adaptor NEMA1, 4, or 12 3 setpoints fixed 10% deadband Door mounted HOA override # PCS/120 20A load relay as req. 3#3X/T Hold-On-Timer 3 large indicating lamps 365 day, 1 or 3 channel electronic time-clock # multi-pole contactors as req. PD-Simulator provided for calibration 3.5 digit panel meter

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