

# Type NLC Lighting Control Panels

Contents	Class	Pages
Pricing .....	8931	..... 3
Ordering Information .....	8931	..... 4
Construction Details .....	8931	..... 4
Application Information .....	8931	..... 5
Energy Management.....	8866	..... 5
Suggested Specification.....	8931	..... 6
Approximate Dimensions .....	8931	..... 7



**SQUARE D COMPANY**

**ORDERING INFORMATION**

1. Complete an estimate containing the information shown in the example for each lighting control panel.
2. Specify basic panel, contactors, special features, and miscellaneous components required by Class & Type or Form designation.
3. Specify system voltage, wiring type, and flush or surface mounting.
4. Provide control sequence or elementary circuit diagram if wiring is to be provided by factory.
5. Square D order point: Milwaukee Systems Headquarters Sales.

**EXAMPLE ESTIMATE**

Panel #	Description	Space	Price
LCP-1 1	Class 8931 Type NLCS-9-US 120 208V 60 HZ	—	\$1460.
	1 — 8903 SMO-2 120 60	1	165.
	5 — 8903 LO-40 120 60	5	970.
	1 — Paragon 4215-00S 120 60	2	1000.
	1 — S-N	1	55.
	6 — On off-auto selector switch	—	468.
	1 — HC3238B Box (38 x 32 x 8 1/4)	—	Incl.
	1 — HC3238TS Surface Trim	—	Incl.
	<b>Total</b>	<b>9</b>	<b>\$4128.</b>

**WIRING TYPES**

Lighting control panels can be provided with three alternative types of wiring.

**Type U — Unwired** — Contactors and other components are mounted and ready for field wiring. Ample gutter space and space between contactors is provided for easy direct access. No separate terminal strips are provided.

**Type W — Factory Wired Control Circuits.** Wiring from contactor coils, selector switches, control transformers, time control motors, and other control components to control terminals is factory installed. Necessary control terminals are provided. Terminals are numbered and elementary diagrams are provided. Wiring to power contacts on contactors and power terminals are not provided.

**Type WW — Complete Factory Wiring.** The control wiring provided in Form W is supplied. In addition, all power contacts are wired to power terminals. Elementary diagrams showing control and power wiring are provided.

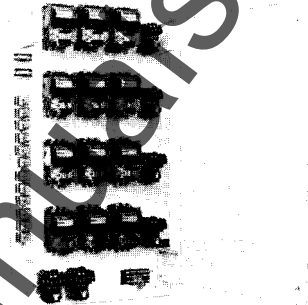
**CONSTRUCTION DETAILS**

**Interiors.** Type NLC interiors consist of a mounting pan which is predrilled for a variety of lighting contactor arrangements and a hinged interior trim. The interior trim provides dead front construction when the panelboard front is in place and is suitable for mounting Class 9001 oil tight push buttons and selector switches. Interiors are finished with a white baked enamel finish which improves visibility during field wiring.

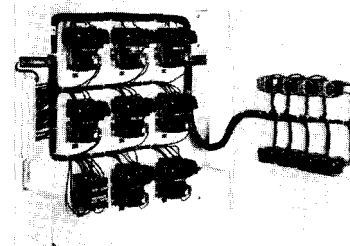
**Fronts.** Type NLCL lighting control panels are supplied with MONO-FLAT fronts with concealed hinges and trim clamps, and a completely flush stainless steel lock. Type NLCS panels are provided with a flush vault type lock with satin chrome finish and with indicating trim clamps. Both lock styles have keys which are interchangeable with each other and with locks on Square D circuit breaker panelboards. All fronts are finished with a gray baked enamel finish and provide an attractive installation that resists tampering. When the front is installed, the control panel provides completely dead front construction.

**Boxes.** Type NLCL lighting control panels are supplied with 26" wide, 6 1/2" deep, galvanized steel boxes with knockouts. Type NLCS panels are provided with 32" wide, 8 1/4" deep boxes having a gray baked enamel finish without knockouts. Boxes have removable end walls for contractors convenience in stubbing conduit.

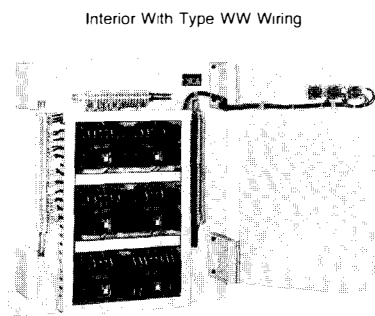
**NEMA 12/3R.** Type NLCW panels are provided with a 26" wide, 9 3/8" deep boxes having a gray baked enamel finish without knockouts. The enclosure door has a 3 point latch with lockable vault handle. An interior door is supplied when door mounted pilot devices are factory assembled.



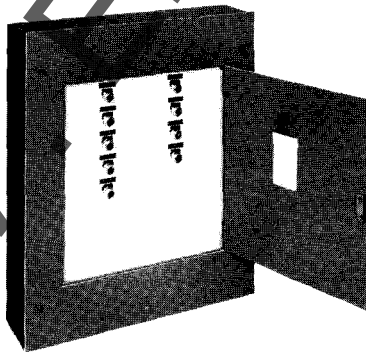
Interior With Type U Wiring



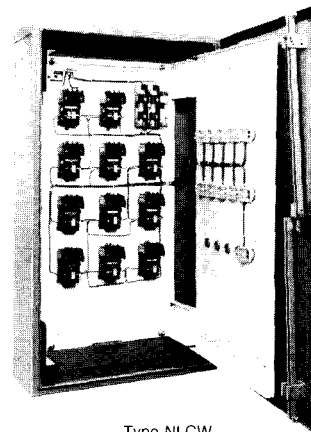
Interior With Type W Wiring



Interior With Type WW Wiring



Type NLCS



Type NLCW



# LIGHTING CONTROL PANELS

## FACTORY ASSEMBLED APPLICATION INFORMATION

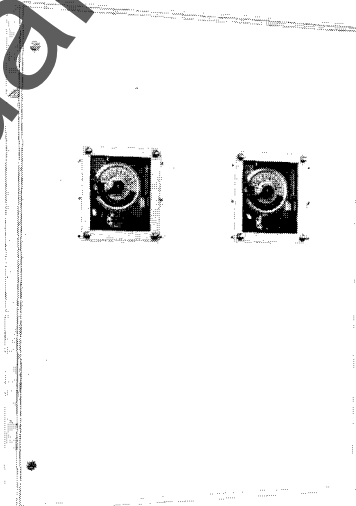
CLASS  
8931

Square D Class 8931 lighting control panels provide an efficient means to group lighting or heating contactors in commercial or industrial buildings. When equipped with integral 24-hour time controls, these units can be used as independent energy saving lighting controllers. When supplied with remote load output devices, they are ideal load switching centers for centralized lighting controllers or energy management systems.

Lighting control panels are designed to be mounted along side circuit breaker lighting and distribution panelboards. They share common cabinets in many cases with Square D Type NHIB and I-LINE panelboards to facilitate the routing of conduit and wiring. Uniform front designs provide an aesthetically pleasing appearance.

**Time Controls.** When the lighting contactor panel is equipped with one or more 24-hour time clocks, it can become an energy saving controller by automatically shedding selected loads on a predetermined time schedule. Each time clock can be programmed for up to seven ON and OFF operations per day. The minimum ON or OFF time is 1½ hours and maximum ON or OFF time is 22½ hours. Each time clock has a skip-a-day feature. As an option, a 10-hour spring wound carry-over feature is available which takes over during a power failure to minimize timer rescttings.

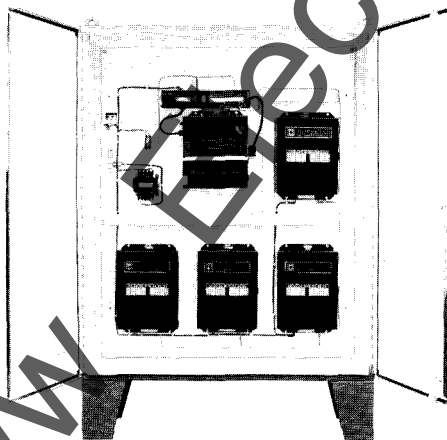
The time clock timing dial is readily accessible from the front by removing the clear plexiglass cover from the interior door. Unauthorized tampering of the timer settings is achieved with the lockable outer door.



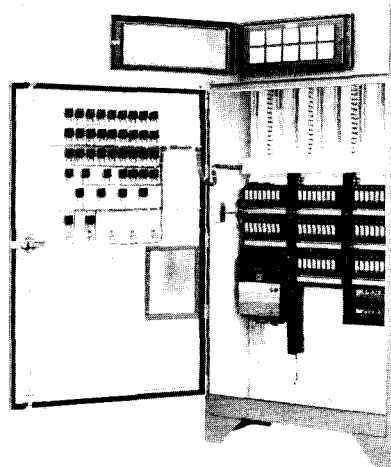
## ENERGY MANAGEMENT

The most effective way to control electrical usage is with the installation of an energy management system. It automatically limits peak demand to a preset level and reduces energy consumption through duty cycling and time of day scheduling. Typical applications include industrial plants, office buildings, hotels/motels, retail stores, schools, hospitals, and supermarkets.

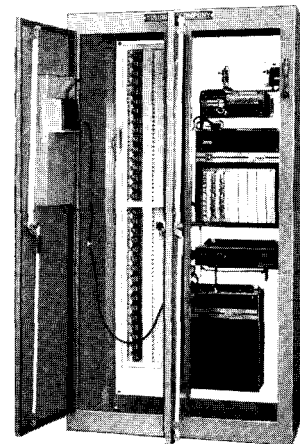
Square D factory assembled energy management systems utilize various types of main controllers to satisfy specific job requirements. These systems vary with the quantity of manageable loads and the degree of management sophistication required.



Class 8866  
Using WATCHDOG™



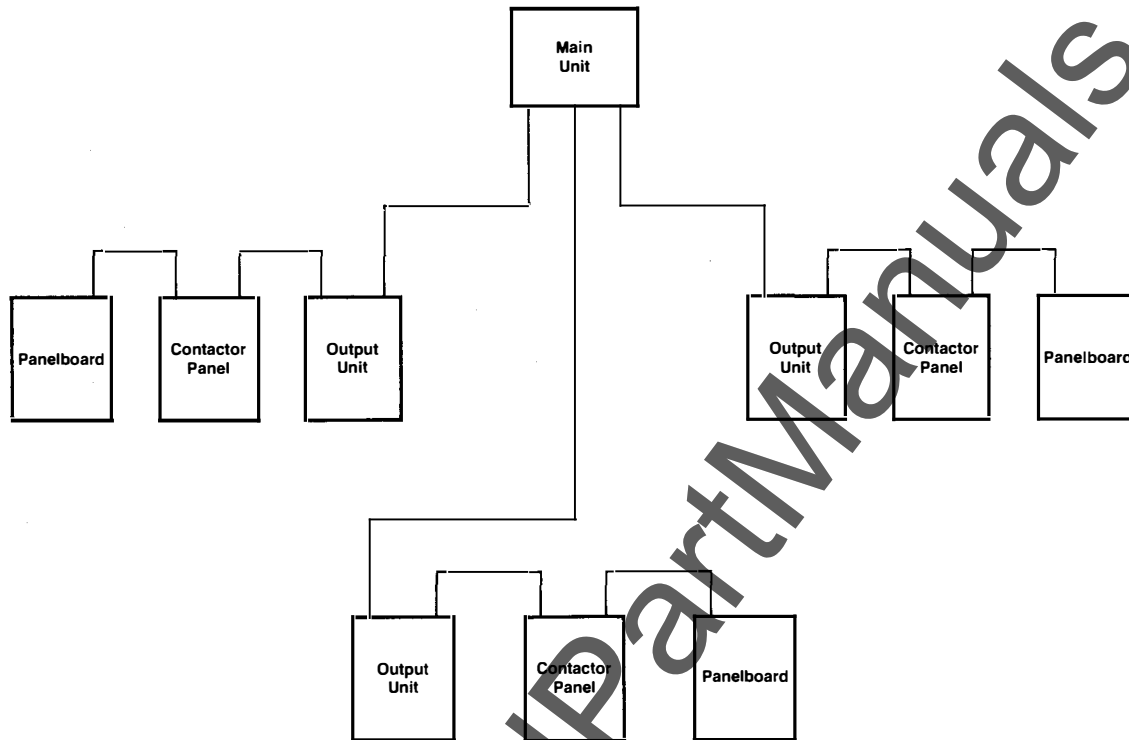
Class 8866  
Using SY:MAX-20™



Class 8866  
Using Class 8881 PC™

TYPICAL ENERGY MANAGEMENT SYSTEM

A typical energy management system has a main unit with appropriate number of output units, contactor panels, and circuit breaker panelboards as illustrated below.



SUGGESTED SPECIFICATIONS  
Lighting Control Panels

Lighting contactors shall be grouped together in lighting control panels as indicated in the lighting control panel schedule. Contactors shall be rated for tungsten, ballast lighting and heating loads and shall have the number of poles and ampere rating indicated on the schedule.

Indoor Panels

Lighting control panels shall be dead front type and be enclosed in a steel cabinet. The box shall be fabricated from galvanized steel or equivalent rust resistant steel. Fronts shall include a door, be similar in appearance to circuit breaker panelboards, and have flush brushed stainless steel cylinder tumbler-type locks. The flush lock

shall not protrude beyond the front of the door. Lighting control panels shall be keyed alike and shall use the same key as the circuit breaker panelboards.

Outdoor Panels

The box shall be rust resistant steel suitable for outdoor use. It shall be NEMA Type 3R; and have a 3 point door latch with a lockable vault type handle. Local control buttons shall be mounted inside the box on a hinged interior door.

Lighting control panels shall be UL labeled and shall be Square D factory assembled Class 8931 Type NLC Lighting Control Panels.

TYPICAL LIGHTING CONTROL PANEL SCHEDULE

Panel Designation	Quantity Contactors	Contact Ampere Rating	Poles		Contactor Type	Elec. Held	Mech. Held	Coil Voltage	Additional Features
			NO	NC					
LPC1	3	20	4	0	L040	X		120	C6, NP
	4	20	6	0	L060	X		120	C6, NP
	1	20	5	1	LL060		X	120	
LPC2	9	20	6	0	LL060		X	120	
LPC3	4	20	6	0	L060	X		120	C6, NP
	6	20	4	0	L040	X		120	C6, NP

# LIGHTING CONTROL PANELS

FACTORY ASSEMBLED

CLASS  
8931

APPROXIMATE DIMENSIONS

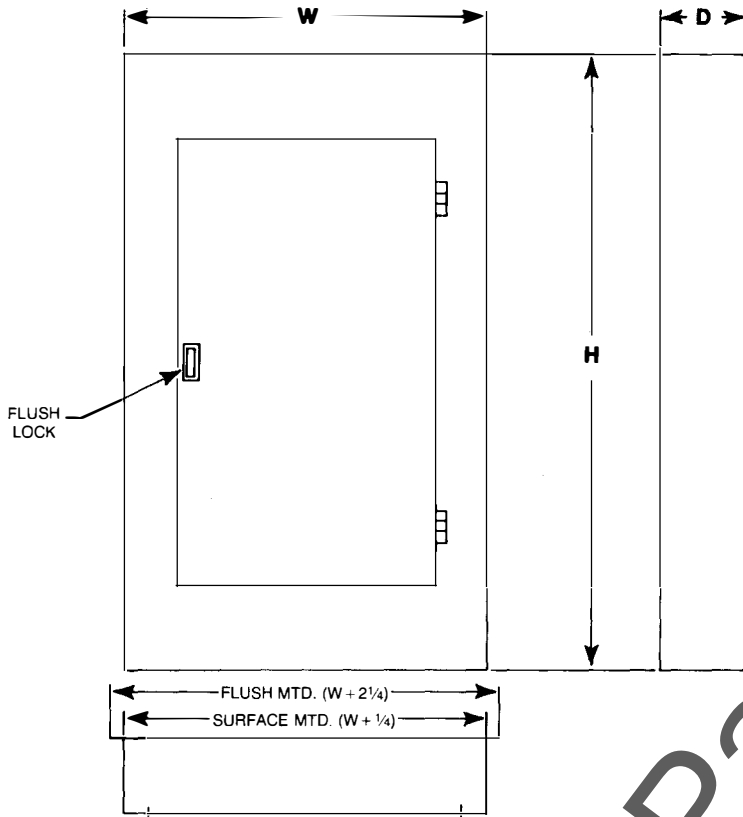


FIGURE 1  
INDOOR

TABLE 5

Assembled Type	Fig No.	Cabinet Data				
		H	W	D	Box	Front
NLCL-8	1	36	26	6 1/2	HC2636B	HC2636C "F" or "S"
NLCL-10	1	45	26	6 1/2	HC2645B	HC2645C "F" or "S"
NLCL-14	1	54	26	6 1/2	HC2654B	HC2654C "F" or "S"
NLCS-9	1	38	32	8 1/4	HC3238B	HC3238TS
NLCS-18	1	56	32	8 1/4	HC3256B	HC3256TS
NLCW-8	2	36	26	9 7/8	HC2636WP	—
NLCW-15	2	45	26	9 7/8	HC2645WP	—
NLCW-18	2	54	26	9 7/8	HC2654WP	—

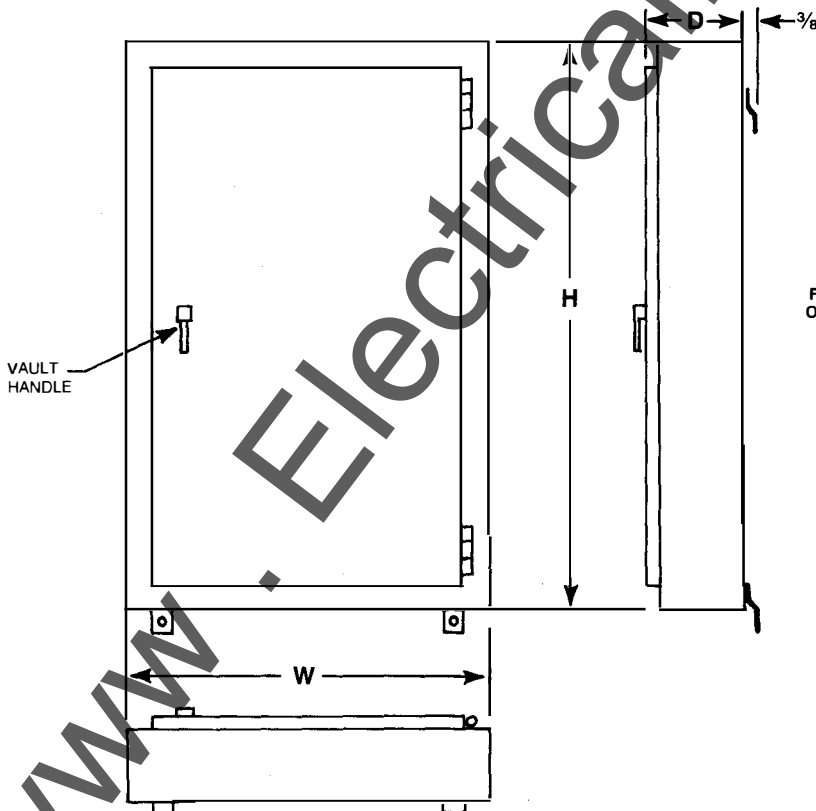


FIGURE 2  
OUTDOOR

www.ElectricalPartManuals.com



**SQUARE D COMPANY**