

All sound systems need a power panel - why not have ONE TOUCH AC power control?

Motorized circuit breakers sequence sound system AC power!

MSP 341-xx Modular Sequencing Panelboard - The Electrician's choice

Low voltage cabinets house sequencer circuit boards

MSLC 341-xx Modular Sequencing Load Center



MSLC 326-xx Modular Sequencing Load Center

LynTec

Modular Sequencing series Power Panels

BENEFITS

- ✓ **ONE TOUCH remote power control**
 - Immediate visual feedback provided by flashing **ON** switch.
 - Light stays **ON** to verify sequence completion.
 - Process is reversed for turn-off sequence.
 - May be controlled from one to six locations.
 - Multiple sequencing panels may be daisy-chained for larger systems.
- ✓ **Reduced installation labor**
 - One wall-mounted, sequenced power panel feeds AC power to all rack and console receptacles.
- ✓ **Low power consumption**
 - **BMB** (Bolt-on) and **MB** (Clip-on) series motorized circuit breakers require no holding current (like DC relays) or heat sinks (like solid state relays).
 - Runs cool — lasts long.
- ✓ **Automatic load shedding and *BROWNOUT* protection**
 - A voltage sensing system automatically sheds the load when AC mains voltage drops below 95 volts for 2 seconds.
 - Capacitor-stored energy zips-off all circuits 2 seconds after power fails.
 - The system automatically re-sequences without operator intervention when stable voltage (above 105 volts for 5 seconds) resumes.
 - Reduces the start-up load for auxiliary power units.
 - Smart wake-up is ideal for unattended systems.
- ✓ **Kill**
 - Emergency instant shutdown may be triggered by an external contact closure.
 - System automatically re-sequences when contact opens.
- ✓ **HurryOff — *Ohh..... no.....* switch — Kill without restart**
 - By holding **any** OFF switch down for 2 seconds, the operator can trigger an instant shutdown with no automatic restart.

LynTec Modular Sequencing series panels add branch circuit sequencing to the main and branch circuit breaker functions normally found in a Load Center or Panelboard.

How they work

Applies AC to low level, front-end electronics... waits for them to stabilize... (clicks and pops are ignored by un-powered power amplifiers)...

AC is then sequenced to power amplifiers to spread high inrush currents over time.

Protects valuable loudspeaker systems by delaying turn-on until all low level equipment has stabilized.

Separate
**ISOLATED
TECHNICAL
GROUND**
cabinet

All
SQUARE D
Panels

ONE TOUCH REMOTE POWER CONTROL

SHOWN ACTUAL SIZE



Green LED illuminated

Red


SS-2 Sequencer Switch Set

One SS-2 switch set is supplied with each panel.

LynTec — AVAILABLE MODELS — LynTec

Panel electrical specifications and configurations — Outline dimensions

The base model -xx suffix is the number of motorized breakers the control system will drive: -12, -24, -36, -48 or -60.

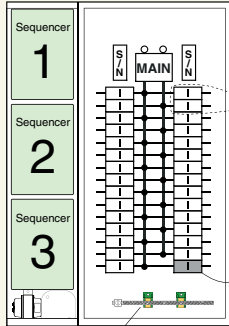
Click on  icon to download model specific Panel Planners for submittals. —

 Full AllPanel brochure.

MSLC 129-xx

Modular Sequencing Load Center
1Ø, 3 wire, 120/240 Vac.
200 Amp Main Breaker Standard

Cabinet Outline — Surface mount only



These two positions used for back fed main breaker in MSLC 127-xx. (For main breakers 100 Amps or less.)

SEQUENCER POWER 10A supplied installed

Isolated Technical Ground Bar

Feed: 2/0 max. Branches: 29 positions, 14 - 4 ga.

Square D QO130M200 Load Center with LynTec low-voltage sidecar.

Standard Main Breaker: QOM2200VH.

200A, 22k AIR. [Amps Interrupt Rating]

Main Breaker option — Part# suffix

-M1150 Amp

Square D#: QOM2xxxVH, All 22k AIR.

Wire: #4 - 350 kcmil Al/Cu.

Other back-fed main options

Uses positions 2 & 4 for back-fed main breaker resulting in a MSLC 127-xx-Mxxx part #.

Main Options — Part# suffix — **Bold face**=Amps

-M1030, -M1040, -M1060,

-M1080 & -M1100 available.

Square D QO2xxxVH, all 22k AIR.

Wire: #4 - 2/0 kcmil Cu.

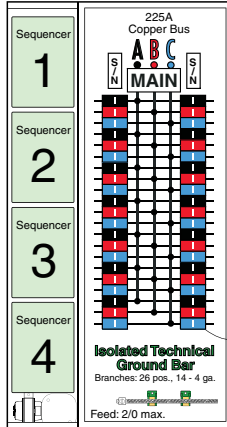
Outside dimensions

20.9" w., 29.8" h., 3.9" d.

MSLC 341-xx or MSLCH 341-xx

Modular Sequencing Load Center
3Ø, 208Y/120 Vac, 4 wire.
225 Amp Main Breaker Standard

Cabinet Outline — Surface mount only



SEQUENCER POWER 10A supplied installed

Square D QO342MQ225 Load Center with LynTec low-voltage sidecar.

Standard Main Breaker: QDL32225. 225 Amp

Main Breaker options — Part# suffix — **Bold face**=Amps

-M3125, -M3150, -M3175 or -M3200

QDL32xxx series (all 25k AIR) [Amps Interrupt Rating]

Wire: 350 kcmil Al or 250 kcmil Cu. 100% Neutral has one feed lug that accepts one 350 kcmil Al or one 250 kcmil Cu wire.

If 200% neutrals or bolt-on breakers are required, use MSP 341-xx Panelboard.

Outside dimensions

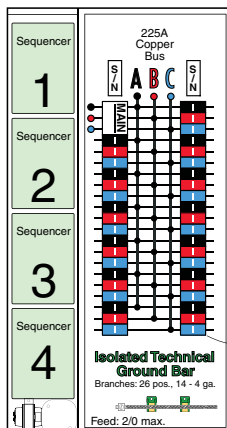
MSLC 341 or MSLC 338

20.9" w., 39.3" h., 3.9" d.

MSLC 338-xx

Modular Sequencing Load Center
3Ø, 208Y/120 Vac, 4 wire.
30 to 100 Amp back-fed Main Breaker

Cabinet Outline — Surface mount only



SEQUENCER POWER 10A supplied installed

Square D QO342 Load Center with LynTec low-voltage sidecar.

back-fed Main Breaker options

Part# suffix — **Bold face**=Amps

-M3030, -M3035: (10kAIR)

Squared D#: QO30xx

-M3050, -M3060, -M3070 or -M3090

Squared D#: QO3xxxVH

(all 22k AIR) [Amps Interrupt Rating]

Wire: #4 - 2/0 kcmil Cu.

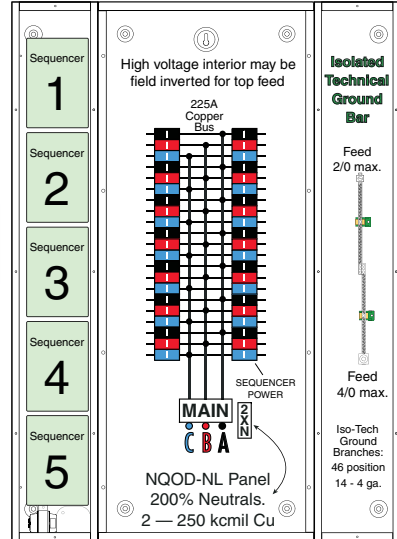
Neutral data and Outline Dimensions

same as MSLC 341 above.

MSP 341-xx or MSPH 341-xx

Modular Sequencing Panelboard
3Ø, 208Y/120 Vac, 4 wire.
225 Amp Main Breaker Standard

Cabinet Outline — Surface mount only



Square D NQOD-NL MB Panel with LynTec sidecars.

Standard Main Breaker: JGP36225YL — 225 Amp

Main Breaker options — Part# suffix — **Bold face** = Amps

-MHG3125, -MJG3150, -MJG3175 or -MJG3200

HGP36xxx or JGP36xxx series (all 65k AIR) [Amps Interrupt Rating]

All Panelboards — Outside dimensions — 36" w., 50" h., 6.13" d.

High voltage interior may be field inverted for top feed.

Knockout panels supplied in both ends.

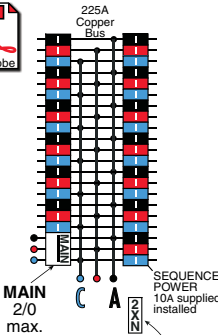
Panelboard INTERIOR Alternatives

Cabinet outlines same as 3 phase above

MSP 338-xx

Modular Sequencing Panelboard
3Ø, 208Y/120 Vac, 4 wire.
30 to 100 Amp QOB3xx series

Bolt-on, back-fed Main Breaker



NQOD-NL Panel

225A Copper Bus

200% Neutrals.

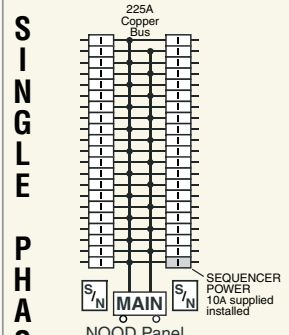
2 — 250 kcmil Cu

MSP 141-xx

Modular Sequencing Panelboard
1Ø, 3 wire, 120/240 Vac.

All Special Order, NCNR.

(Non Cancelable, Non Returnable)



NQOD Panel

225A Copper Bus

#4 — 300 kcmil Al/Cu

Main Breakers available

QDL22xxx series — All 25k AIR

Part# suffix — **Bold face** = Amps

-MQD2070, -MQD2080, -MQD2090,

-MQD2100, -MQD2110, -MQD2125,

-MQD2150, -MQD2175, -MQD2100,

-MQD2200, -MQD2225.

MSPH option: QGL22xxx series — All 65k AIR.

Any of the above ratings — use -MQG2xxx suffix

Specifier's Guide for LynTec Modular Sequencing Panels

Load Center and Panelboard part number explanation

Blue type items only available for Panelboards.

Optional field installed branch circuit breaker numbers

Panelboards

MSP 341

3 = 3 phase
208/120v, 4 wire
or
1 = 1 phase
120/240v, 3 wire
Single Phase
Panelboards are
Special Order,
NCNR.

41
38 ♦
Number of
available
circuit
breaker
spaces

Load Centers

MSLC 326

1 = 1 phase
120/240v, 3 wire
or
3 = 3 phase
208/120v, 4 wire

127 ♦
129 ♦
326
338 ♦
341
Number of
available
circuit
breaker
spaces

Load Center Main Breaker Options

Single Phase Load Center

The standard Single Phase MSLC 129-xx has a factory installed, two pole, ♦ 200 Amp main breaker. [22kAIR] (AIR = Amps Interrupt Rating)

Optional main breakers [All 22kAIR]
125A -M1125
150A -M1150 (25 kVA transformer)
175A -M1175.

♦ Smaller main sizes are also available by replacing the large block type main breaker with a bracket-retained, clip-on, back-fed, 2 pole, main breaker.

[All 10kAIR Amps Interrupt Rating]
30A -M1030 (5 kVA transformer)
40A -M1040 (7.5 kVA)
60A -M1060 (10 kVA)
80A -M1080 (15 kVA)

♦ Note This modification reduces the number of available branch breaker spaces from 29 to 27, hence a MSLC 129-xx becomes a MSLC 127-xx.

-36 21/BMB-20 8/BMB-30 5/BUMB-20 -MJG3150

12
24
36
48
60
panelboard only

Sequencer capacity—will drive up to this number of motorized breakers

BMB
Bolt-on
Motorized
breakers

or
MB
Clip-on
Motorized
breakers

Quantity of
lowest current
sequenced
circuit breakers

15
20
30
Current
rating

BMB
Bolt-on
Motorized
breakers

or
MB
Clip-on
Motorized
breakers

Quantity of
higher current
sequenced
circuit breakers

20
30
Current
rating

BUMB = Bolt-on
or
UMB = Clip-on

Quantity of
single pole
Un-Motorized
circuit breakers

10
15
20
30
Current
rating

-Main breaker
&
-Main Lug Only
options
SEE BELOW

Load Center — Panelboard

What's the difference?

Panelboards are the electrician's choice because they have over 250% more wiring space. Panelboards are used when bolt-on breakers, 200% neutrals or high circuit counts with heavy isolated technical ground wires are required.

Load Centers are typically used where the circuit count isn't high. They offer the lowest cost.

Factory options — add suffix to part number

-CR-x: Completion Relay option.

Provides SPDT (form C) relay contact that changes state at the completion of any field selectable step.

Add -CR-x for each board requiring CR option at time of manufacture. -x is the board position where CR option is desired. Example: MSP 341-36 28/20 4/30 9/UMB20 M150 -CR-3 would have the CR relay in the 3rd board from the top.

Front-end remote control

Several options are now available for the remote control of ac for the F.O.H, mix position, booth or control room.

See <http://www.lyntec.com/boothoptions.pdf>

Small 3 Phase Load Center

The standard MSLC 326-xx has a bracket-retained, clip-on, back-fed, 3 pole, 100 Amp main breaker.

In some instances a smaller isolation transformer feeding the panel requires the use of a smaller main breaker. See ♦ below for optional main breaker sizes available.

Large 3 Phase Load Center

The standard MSLC 341-xx has a factory installed, 3 pole, 225 Amp main breaker (65 kVA transformer) [25kAIR Amps Interrupt Rating].

Optional main breakers [All 25kAIR]

125A -MQD3125 (36 kVA transformer)
150A -MQD3150 (45 kVA)
175A -MQD3175 (50 kVA)
200A -MQD3200 (60 kVA)

♦ Smaller main sizes are also available by replacing the large block type main breaker with a bracket-retained, clip-on, back-fed, 3 pole, main breaker.

♦ 30A & 35A: 10kAIR
♦ 50A up: 22kAIR (Amps Interrupt Rating)
♦ 30A -M3030 (7.5 kVA transformer)
♦ 35A -M3035 (10 kVA)

♦ 50A -M3050 (15 kVA)
♦ 70A -M3070 (20 kVA)
♦ 90A -M3090 (25 kVA)
♦ 100A -M3100 (30 kVA)

Note This modification reduces the number of available branch breaker spaces from 41 to 38, hence a

MSLC 341-xx becomes a MSLC 338-xx.

-MLO (Main Lug Only) option:

We only stock MSLC panels with main breakers. If your specification requires a -MLO we will provide it at the same price as the standard panel.

Panelboard Main Breaker Options

The standard MSP 341-xx has a JGP36225, 3 pole, 225 Amp main breaker (65 kVA). 65k AIR [Amps Interrupt Rating].

Optional main breakers [All 25kAIR]

125A -MHG3125 (36 kVA transformer)
150A -MJG3150 (45 kVA)
175A -MJG3175 (50 kVA)
200A -MJG3200 (60 kVA)

♦ Smaller main sizes are also available by replacing large main breaker with a 3 pole, bolt-on, back-fed breaker.

♦ 30A -BM3030 (7.5 kVA transformer)
♦ 35A -BM3035 (10 kVA)
♦ 50A -BM3050 (15 kVA)
♦ 70A -BM3070 (20 kVA)
♦ 90A -BM3090 (25 kVA)
♦ 100A -BM3100 (30 kVA)

♦ 30A & 35A: 10kAIR
♦ 50A up: 22kAIR (Amps Interrupt Rating)

Note This modification reduces the number of available branch breaker spaces from 41 to 38, hence a MSP 341-xx becomes a MSP 338-xx. -MLO (Main Lug Only) is an option.

Single Phase Panelboard

The special order MSP 141 or MSPH 141 have the following main breaker options: MSP 141 -MQD2xxx series — 25k AIR MSPH 141 -MQG2xxx series — 65k AIR

Ratings available: 70A, 80A, 90A, 100A, 125A, 150A, 175A, 200A or 225A.

ARCHITECT'S and ENGINEER'S SPECIFICATIONS
Sound system A.C. power Sequencing Load Center

All A.C. power for the sound system shall be supplied from a time sequenced source capable of being remote controlled from multiple locations.

A means of visual operator feedback shall provide an indication of the progress of the power turn-on or turn-off sequence at each control point.

Time between sequence steps shall be adjustable from 1/8 second to 1 second.
Sequencing shall have a time delay adjustable between the low-level equipment circuits and the power amplifier circuits. The delay time shall have a field adjustable range from 1 second to 8 minutes.

The sequencing system shall be capable of shedding the load within 3 seconds after a power failure and automatically re-sequencing when power resumes and remains above 105 volts for more than 5 seconds without operator intervention.

The sequencing system shall have brownout protection; monitoring the line voltage and triggering an automatic shutdown if the line voltage drops below 95 volts for more than 2 seconds.

The sequencing system shall have emergency shutdown capability triggered by external contacts or the sound system operator.

Un-sequenced circuits, as required, shall be supplied from the same A.C. source so that a single lever main circuit breaker is dedicated to the sound system.

All Sequencing Load Centers shall have an isolated technical ground bar.

The sound system power sequencing shall be the LynTec model MSLC xxx series Sequencing Load Center

Lyntec, Inc. — 800-724-4047 — www.lyntec.com

Models:

Single Phase, 22k AIR: **MSLC 129-12, MSLC 129-24, MSLC 129-36**

Balanced Power, 60v — 0 — 60v, 22k AIR: **MSLC 119-12, MSLC 119-24**

Three Phase, 22k AIR: **MSLC 326-12, MSLC 326-24, MSLC 326-36**

Three Phase, 25k AIR: **MSLC 341-12, MSLC 341-24, MSLC 341-36, MSLC 341-48**

Three Phase, 65k AIR: **MSLCH 341-12, MSLCH 341-24, MSLCH 341-36, MSLCH 341-48**

This document available in Word format:
http://www.lyntec.com/139-0345_LdCntr_A&E_Spec.doc

Most recent version pdf
http://www.lyntec.com/139-0345_LdCntr_A&E_Spec.pdf

139-0345-01_LdCntr_A&E_Spec 10/31/06

Planning and Layout Worksheet — As-built door label

LynTec MSLC 329-xx-MLO Modular Sequencing Load Center

(One-Touch, sequential AC power control for Sound & AV Systems)

Breaker types, sizes, positions and connections

Job _____

Panel _____

Comments _____

by _____ Date _____

Transfer as-built information to the door label upon completion.

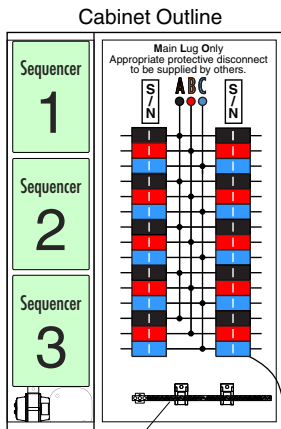
Keep this sheet for as-built documentation

Available as PDF download
www.lyntec.com/139-0298_MSLC329Plnr.pdf

LynTec MSLC 329-xx-MLO

-xx = Maximum number of sequenced breakers.
 See right side of page for model number explanation.

Modular Sequencing Load Center Main Lug Only



Isolated Technical Ground Bar
 Feed: 2/0 max.
 Branches: 26 positions, 14 - 4 ga.

Square D QO330L200G Load Center with LynTec low-voltage sidecar.

Main Lug Only

Mains rating: 200 amps

Wire: #4 - 250 AWG/kcmil Al or Cu.

Outside dimensions
 20.9" w., 29.8" h., 3.9" d.
 Surface mount only.

Each motorized breaker is controlled by a sequencer.

As-built door label example:

Step # **1a** (1a) (# in parenthesis is *suggested* breaker connection in sequencer).

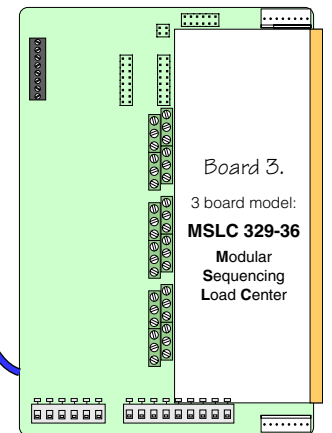
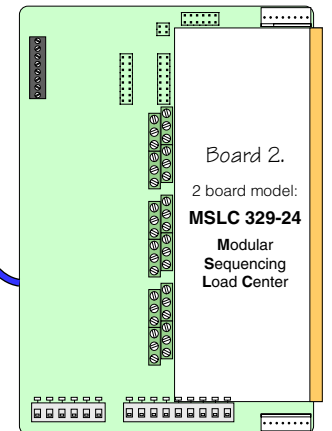
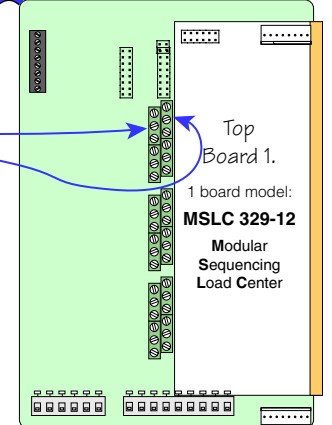
Bold line around box **1** = *suggested* sequencer board: #1 (Top), #2 or #3.

Fill in **1** box to indicate which sequencer board this breaker is connected to.

Breaker #	Phase	Amp	Un-motorized	Motorized-Step #	Motorized-Step #
1	A		<input type="checkbox"/>	(1a)	(1b)
3	B		<input type="checkbox"/>	(2a)	(2b)
5	C		<input type="checkbox"/>	(3a)	(3b)
7	A		<input type="checkbox"/>	(4a)	(4b)
9	B		<input type="checkbox"/>	(5a)	(5b)
11	C		<input type="checkbox"/>	(6a)	(6b)
13	A		<input type="checkbox"/>	(1a)	(1b)
15	B		<input type="checkbox"/>	(2a)	(2b)
17	C		<input type="checkbox"/>	(3a)	(3b)
19	A		<input type="checkbox"/>	(4a)	(4b)
21	B		<input type="checkbox"/>	(5a)	(5b)
23	C		<input type="checkbox"/>	(6a)	(6b)
25	A		<input type="checkbox"/>	(1a)	(1b)
27	B		<input type="checkbox"/>	(2a)	(2b)
29	C		<input type="checkbox"/>	(3a)	(3b)
SEQUENCER POWER 30 10A un-motorized breaker supplied installed.					

Which Board?

MS-12 Sequencer circuit boards in left-hand, low voltage cabinet.



How it works

The **SEQUENCER POWER** circuit breaker powers the sequencer circuit boards via a 24 volt transformer.

Motorized circuit breakers (marked **REMOTELY OPERATED**) are time sequenced by relays in the adjacent, left-side, low voltage sequencer cabinet.

The **ON** or **OFF** sequence is initiated at remote sound system locations and may be locally tested with the **top** green ON and **bottom** red OFF buttons on the circuit boards.

Sequenced breakers are sequenced on (Steps 1 to 6) and off (Steps 6 to 1) at 1/8 to 1 second intervals and may have a programmed **PAUSE DELAY** of up to 8 minutes during the sequence. These **STEP RATE**, **DELAY TIME** and **DELAY POSITION** settings are set by moveable jumpers inside the sequencer cabinet.

Each 6 step sequencer board controls up to 12 breakers by turning on and off two breakers per step.

The circuit boards are factory daisy-chained, top-to-bottom, with the **Cascade Connector (4 pin)** set.

The **Power & Kill Connector (4 pin)** set carries power, common and Kill signals.

ZIP-OFF load shedding

2 seconds after a power failure, the sequencer turns off all sequenced breakers. When power resumes the sequencer automatically re-sequences the system on.

ZIP-OFF may be demonstrated by turning off the **SEQUENCER POWER** breaker momentarily.

Low voltage control Wiring Diagram located inside left cover.

www.lyntec.com/139-0327_SequencerLV_Wiring.pdf

www.LynTec.com
 800-724-4047
 8-5 Central Time

146-0258-02 MSLC 329

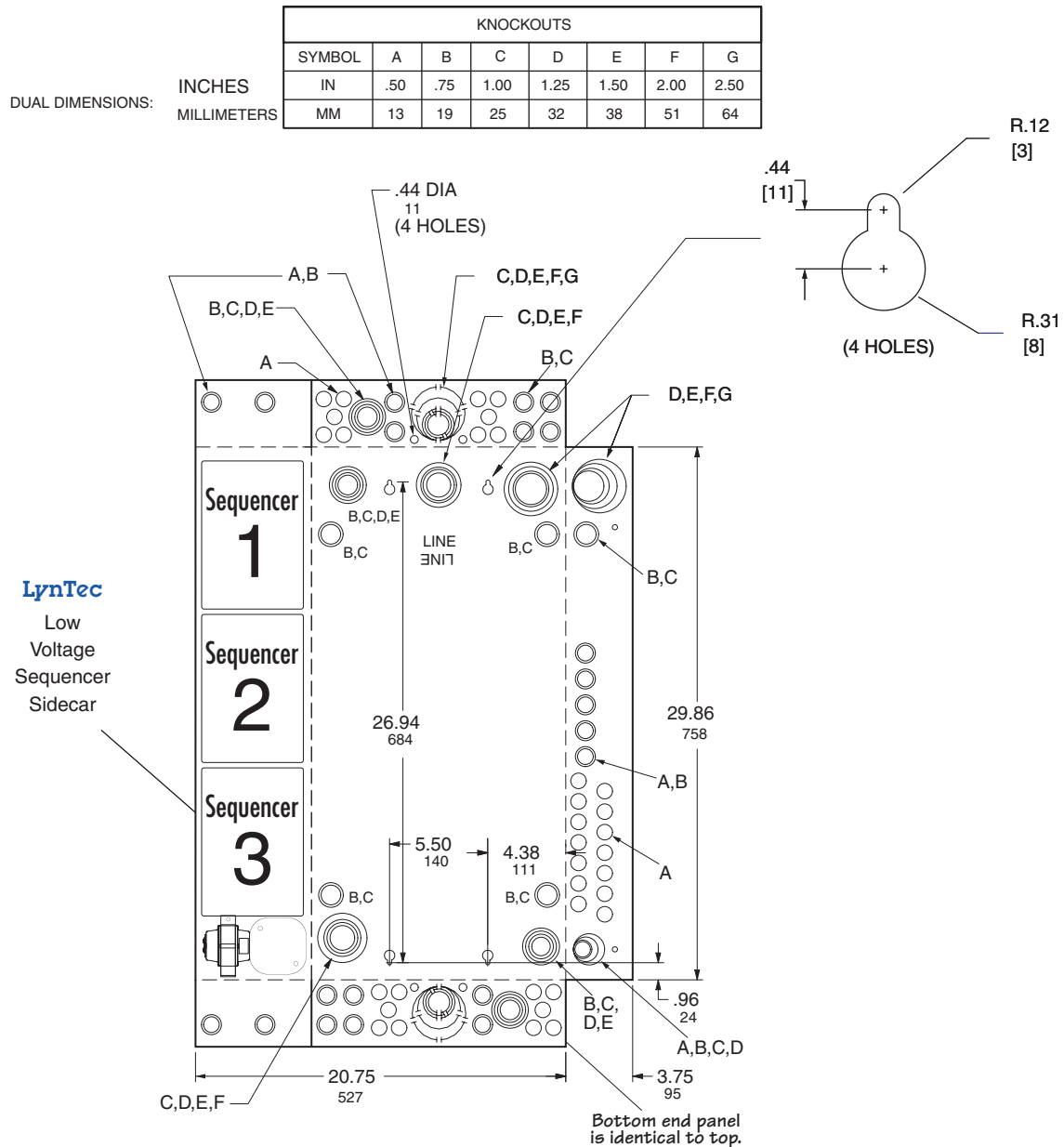
Mechanical Dimensions and Knockouts

LynTec MSLC 113-xx, MSLC 127-xx or MSLC 129-xx Modular Sequencing Load Center

LynTec LCLC 326-xx or LCLC 329-xx (MLO) Lighting Control Load Center

LynTec MSLC 326-xx or MSLC 329-xx (MLO) Modular Sequencing Load Center

Surface Mount **ONLY**



LynTec	SQUARE D CATALOG NUMBER	MAXIMUM SYSTEM VOLTAGE	MAINS AMPERE RATING	SPACES	MAXIMUM NUMBER OF SINGLE POLE CIRCUITS	MAIN WIRE SIZE AWG AL/CU
MSLC 113-xx, MSLC 127-xx or MSLC 129-xx	QO130M200	120/240Vac 1Ø, 3W	200	30	30	#4-250
LCLC 326-xx, MSLC 326-xx or (MLO) LCLC 329-xx, MSLC 329-xx	QO327M100	208Y/120Vac 3Ø, 4W	100	27	27	#4-2/0



QDL & QGL
 2 and 3-pole
 70–250 Amperes

POWERPACT Q-frame ▲ —250 A, Thermal-magnetic (240 Vac)

Current Rating @ 40°C	AC Magnetic Trip Settings		D Interrupting	G Interrupting
	Hold	Trip	Catalog Number	Catalog Number
2-pole, 240 Vac				
70	1000	1800	QDL22070	QGL22070 ++
80	1000	1800	QDL22080	QGL22080 ++
90	1000	1800	QDL22090	QGL22090 ++
100	1200	2400	QDL22100	QGL22100 ++
110	1200	2400	QDL22110	QGL22110 ++
125	1200	2400	QDL22125	QGL22125 ++
150	1200	2400	QDL22150	QGL22150 ++
175	1200	2400	QDL22175	QGL22175 ++
200	1200	2400	QDL22200	QGL22200 ++
225	1200	2400	QDL22225	QGL22225 ++
250	1200	2400		

LynTec
MSP 139
 Use a 2 pole, back-fed
 main breaker, rated at
 100 AMPS or less.
 QO2xxxVH Series
 22kAIR

LynTec
MSP 119
MSP 141
 ++ All models
 70–225A
 Special order, **NCNR**
 Non Cancelable
 Non Returnable

Current Rating @ 40°C	AC Magnetic Trip Settings		D Interrupting	G Interrupting
	Hold	Trip	Catalog Number	Catalog Number
3-pole, 240 Vac				
70	1000	1800		QGL32070
80	1000	1800		QGL32080
90	1000	1800		QGL32090
100	1200	2400		QGL32100
110	1200	2400		QGL32110
125	1200	2400		QGL32125
150	1200	2400	QDL32150 +	QGL32150
175	1200	2400	QDL32175	QGL32175 +
200	1200	2400	QDL32200 +	QGL32200
225	1200	2400	QDL32225 ➤	QGL32225 +
250	1200	2400		

LynTec
LCLC 326
MSLC 326
MSLC 338
MSP 338
 Use a 3 pole, back-fed
 main breaker, rated at
 100 AMPS or less.
 QO3xxxVH Series
 22kAIR

LynTec
LCLC 341
MSLC 341
 ➤ Standard
 + Optional from stock

LynTec
MSLCH 341
 + Optional from stock

▲ Replacement lugs are not available for POWERPACT Q-frame circuit breakers.
 Lugs for the POWERPACT Q-frame circuit breakers accept (1) #4–300 kcmil.

Interrupting Ratings (kA)

	QD	QG
240 V	25	65

For Branch Breaker Series Ratings
 see http://www.lyntec.com/139-0407_Series_Ratings.pdf

Accessories pages 6-36–6-38
 Optional Lugs pages 6-43, 6-44
 Dimensions pages 6-49, 6-50
 Enclosures pages 6-51–6-54

Series Ratings
For NQOD and NF Panelboards
Class 1630, 1670

This page contains UL Tested and Certified series combination ratings for panelboards. These ratings apply to either an integral main located in the same enclosure or a remote main located in a separate enclosure.

NQOD Series Ratings

Table with 6 columns: Maximum System Voltage AC, Maximum Short Circuit Current Rating (RMS Symmetrical), Integral or Remote Main Circuit Breakers and Remote Main Fuses, Branch Circuit Breaker Designations and Allowable Ampere Ranges (Type, 1-pole, 2-pole, 3-pole).

QOBxxx (B) = BUMB series Bolt-on, UnMotorized Breaker
-xxx = poles. xxx = trip current.
[1 pole] BUMB-15, BUMB-20, BUMB-30
[2 pole] BUMB-215, BUMB-220, BUMB-230
[3 pole] BUMB-315, BUMB-320, BUMB-330
QOxxx = UMB series clip-on, UnMotorized Breaker
-xxx = poles. xxx = trip current.
[1 pole] UMB-15, UMB-20, UMB-30
[2 pole] UMB-215, UMB-220, UMB-230
[3 pole] UMB-315, UMB-320, UMB-330
All 15 & 20 A breakers are HM (High Magnetic)

NQOD Series Ratings (Continued)

Continuation of the NQOD Series Ratings table, showing additional circuit breaker combinations and ratings.

- ▲ Suffixes HID, SWD and SWN may also be applied to the applicable branch circuit breakers shown above, except suffix SWN may NOT be applied in combination with LC main circuit breakers.
- Where QO (B) circuit breakers are shown above, QO (B) H, QO (B) VH, and QH (B) circuit breakers may also be used.
- ◆ For shown circuit breakers rated less than this maximum voltage, the indicated short circuit current rating also applies, but at the voltage rating of the circuit breaker.
- ★ Only 15–30 A circuit breakers may be used when the LC circuit breaker is rated 450, 500 or 600 A.
- ▼ Circuit breakers may not be used when the LC circuit breaker is rated 450, 500 or 600 A.
- △ Obsolescent. Contact your nearest Square D/Schneider Electric sales office for replacement circuit breaker. One-pole FJ circuit breakers are still available.

NF Series Ratings

Table with 5 columns: Maximum System Voltage AC, Maximum Short Circuit Current Rating (RMS Symmetrical), Main Type, Branch Type, Poles.

QOBPLxxx-5393 = BMB series Bolt-on, Motorized. (REMOTELY OPERATED)
-xxx = poles. xxx = trip current. -5393 suffix denotes special 60" control wires.

[1 pole] BMB-15, BMB-20, BMB-30
[2 pole] BMB-215, BMB-220, BMB-230, BMB-240, BMB-250, BMB-260
[3 pole] BMB-315, BMB-320, BMB-330

QOPLxxx-5393 = MB series clip-on, Motorized. (REMOTELY OPERATED)
-xxx = poles. xxx = trip current. -5393 suffix denotes special 60" control wires.

[1 pole] MB-15, MB-20, MB-30
[2 pole] MB-215, MB-220, MB-230, MB-240, MB-250, MB-260
[3 pole] MB-315, MB-320, MB-330

Instruction Bulletin

QO-PL (Plug-on), QOB-PL (Bolt-on) Powerlink® Remotely Operated Circuit Breakers

(Use in Type QO Load Centers and Type NQO, NQOB, and NQOD Panelboards)

Retain for future use.

REQUIREMENTS

Remotely Operated Circuit Requirements

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION.

When servicing a branch circuit fed by a remotely operated circuit breaker, move handle of remotely operated circuit breaker to OFF position. Do not rely on remote operation to open circuit breaker.

Failure to follow these instructions will result in personal injury or death.

CIRCUIT BREAKER INSTALLATION

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow these instructions will result in death, or serious injury.

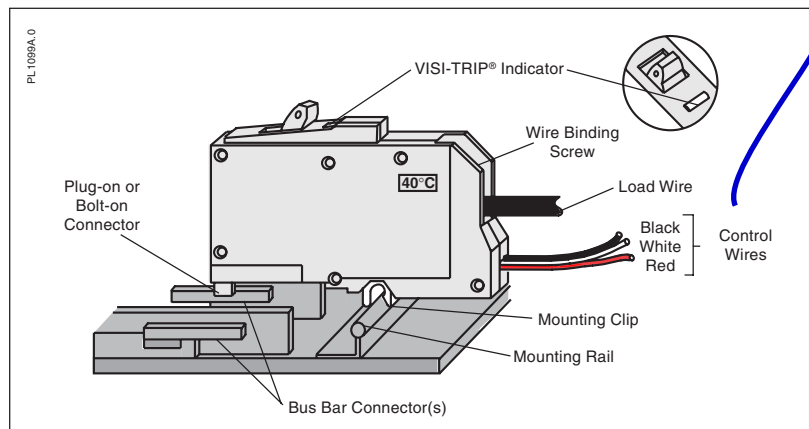
POWERLINK® QO(B)-PL Remotely Operated Circuit Breakers require a power supply capable of delivering at least two amperes at 24 Vdc for a minimum of 50 milliseconds. One-, two-, and three-pole circuit breakers all have one internal motor, and power requirements are the same regardless of the number of poles and ampere ratings.

The required power supply ampacity and control device contact rating are determined by the number of circuit breakers to be switched simultaneously (i.e., four circuit breakers switched simultaneously require a power supply and a control device contact rated 8 amperes minimum). The control device may be either a normally-open (NO)/normally-closed (NC) contact; a single-pole, double-throw switch (SPDT); or other three-wire control device.

1. Turn off all power supplying this equipment before working on or inside equipment.
2. Before installing circuit breaker turn circuit breaker handle to OFF position.
3. Remove panelboard cover and deadfront. Verify power is off with voltage meter before proceeding.

Installation of circuit breaker into panelboard/load center (refer to figure below)

All LynTec supplied breakers have special 60" control wires. (Square D standards are 18".)



4. Except for remotely operated connections, QO(B)-PL remotely operated circuit breakers are installed in a panelboard/load center the same as conventional QO(B) circuit breakers.

Connection of remotely operated circuit (refer to the figure on next page)

5. Assure that power supply and control device meet requirements listed under "Remotely Operated Circuit Requirements."

**See page 2 for
LynTec
part number explanation**

CIRCUIT BREAKER INSTALLATION

CAUTION

HAZARD OF CIRCUIT BREAKER DAMAGE.

Connect the 24 Vdc remote control wiring as shown on this page.

Failure to follow these instructions can permanently damage the remotely operated circuit breaker.

LynTec part numbers

MB series motorized circuit breakers (Snap-On)

May be used in LCLC, LCP, MSLC, MSP, SLC or SP series panels.

BMB series motorized circuit breakers (Bolt-On)

Use only in LCP, MSP or SP Panelboards

All **BMB** & **MB** series breakers have Square D part number suffix of -5393 indicating a special 60 inch lead length for remote control wires required to connect to LynTec control boards in low voltage cabinet.

** = Stocked items

****MB-15 = 15 Amp.** Square D QO-115PL-5393

****BMB-15 = 15 Amp.** Square D QOB-115PL-5393

****MB-20 = 20 Amp.** Square D QO-120PL-5393

****BMB-20 = 20 Amp.** Square D QOB-120PL-5393

****MB-30 = 30 Amp.** Square D QO-130PL-5393

****BMB-30 = 30 Amp.** Square D QOB-130PL-5393

Two pole motorized - call for pricing & delivery

MB-215 = 15 Amp. Square D QO-215PL-5393

BMB-215 = 15 Amp. Square D QOB-215PL-5393

****MB-220 = 20 Amp.** Square D QO-220PL-5393

****BMB-220 = 20 Amp.** Square D QOB-220PL-5393

MB-230 = 30 Amp. Square D QO-230PL-5393

BMB-230 = 30 Amp. Square D QOB-230PL-5393

40A, 50A or 60A, Two pole also available on Special Order

Three pole motorized - call for pricing & delivery

MB-315 = 15 Amp. Square D QO-315PL-5393

BMB-315 = 15 Amp. Square D QOB-315PL-5393

MB-320 = 20 Amp. Square D QO-320PL-5393

BMB-320 = 20 Amp. Square D QOB-320PL-5393

MB-330 = 30 Amp. Square D QO-330PL-5393

BMB-330 = 30 Amp. Square D QOB-330PL-5393

LynTec also stocks **UMB** & **BUMB** (un-motorized) QO series circuit breakers including HM (High Magnetic). Recommended for eliminating nuisance trips in high inrush applications. [All BMB & MB-x15's and BMB & MB-x20's are HM breakers.]

800-724-4047

LynTec • www.LynTec.com

8401 Melrose Dr., Lenexa, KS 66214, USA

Voice 913-529-2233 • Fax 888-722-4157 or 913-529-4157

LynTec overprint 139-0216-08.2 9/23/06

- All wiring and splicing must comply with applicable code requirements for Class 1 circuits. Refer to paragraph 373-8 and article 725 of the National Electrical Code.
- Three #18 AWG control wires are attached to the remotely operated circuit breaker for connection to the power supply and remote control device and should be cut to the required length to reach the splice connections. Use #18 AWG or larger conductors with 600 V insulation and approved wire connectors for splices.
- Connect the black lead of the remotely operated circuit breaker to the negative (-) terminal of the 24 Vdc power supply. Connect the red lead of the remotely operated circuit breaker to the positive (+) terminal of the 24 Vdc power supply. Connect the white lead of the remote control device. The remote control device provides connections between either positive or negative potential of the power supply and the white wire of the remotely operated circuit breaker, as appropriate.
- Applying the positive potential of the power supply to the white wire (contact closure between the red wire and white wire) will operate the remote mechanism of the circuit breaker to the OFF position. Applying the negative potential of the power supply to the white wire (contact closure between the black wire and the white wire) will operate the remote mechanism of the circuit breaker to the ON position. A control circuit utilizing a normally open (NO)/normally closed (NC) contact is illustrated below.

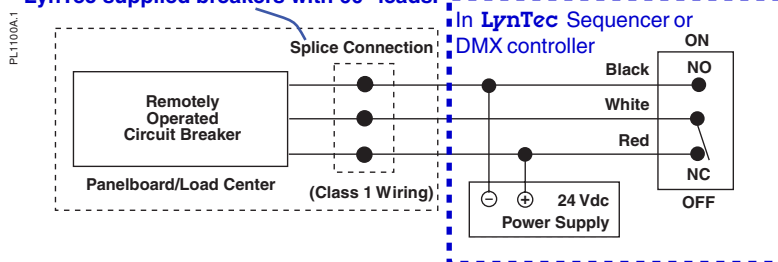
NOTE: The remote mechanism will not move the circuit breaker handle. Also, the remote mechanism cannot turn power ON when the circuit breaker is tripped (VISI-TRIP® flag indicator showing) or when the circuit breaker handle is in the OFF position.

Installation of the trim and operational checks

- Remove corresponding twist-out from panelboard trim and replace trim.
- Turn power to panelboard on.
- Turn remotely operated circuit breaker handle to the ON position.
- Turn power to the remotely operated circuit on and test this circuit, turning remotely operated circuit breaker off remotely, then on remotely. If power to remote controlled circuit breaker load does not switch off and on, turn off power to remotely operated circuit and panelboard and check wiring.

NOTE: A power supply is available from Square D Company, Cat. No. QOPLPS (plug-on) or QOBPLPS (bolt-on).

Splice not normally required with LynTec supplied breakers with 60" leads.



Square D Company
3700 Sixth Street SW
Cedar Rapids IA 52404 USA
1-888-SquareD (1-888-778-2733)
www.SquareD.com

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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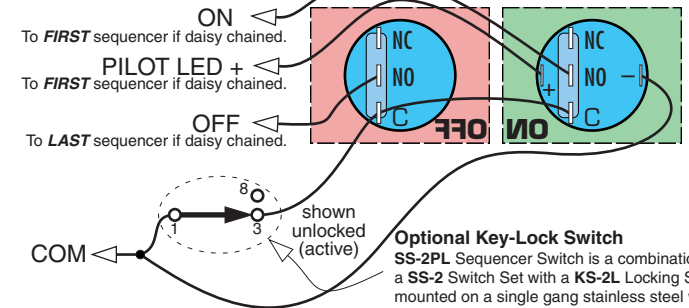
A.C. Sequencing Systems

Wire requirements

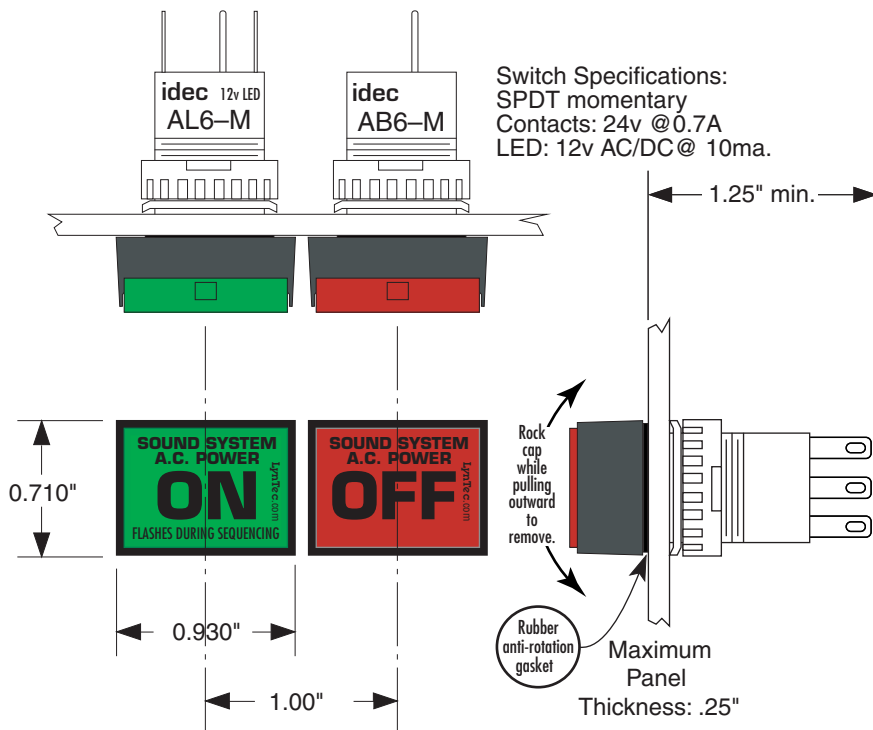
Switch set to sequencer: 4 conductors.
Between daisy chained sequencers:
9 conductors, 11 if Power Vouchers are used.
Up to 2500 ft. run: 24 ga.
2,500 to 3,750 ft. run: 22 ga.

To **Lyntec**
PDS, MRTS, MSLC,
SLC, MSP or SP
series sequencer

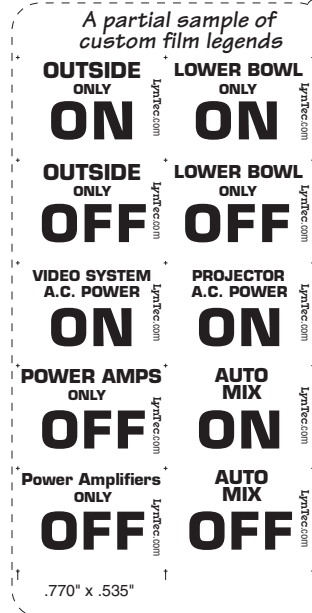
Rear view wiring diagram



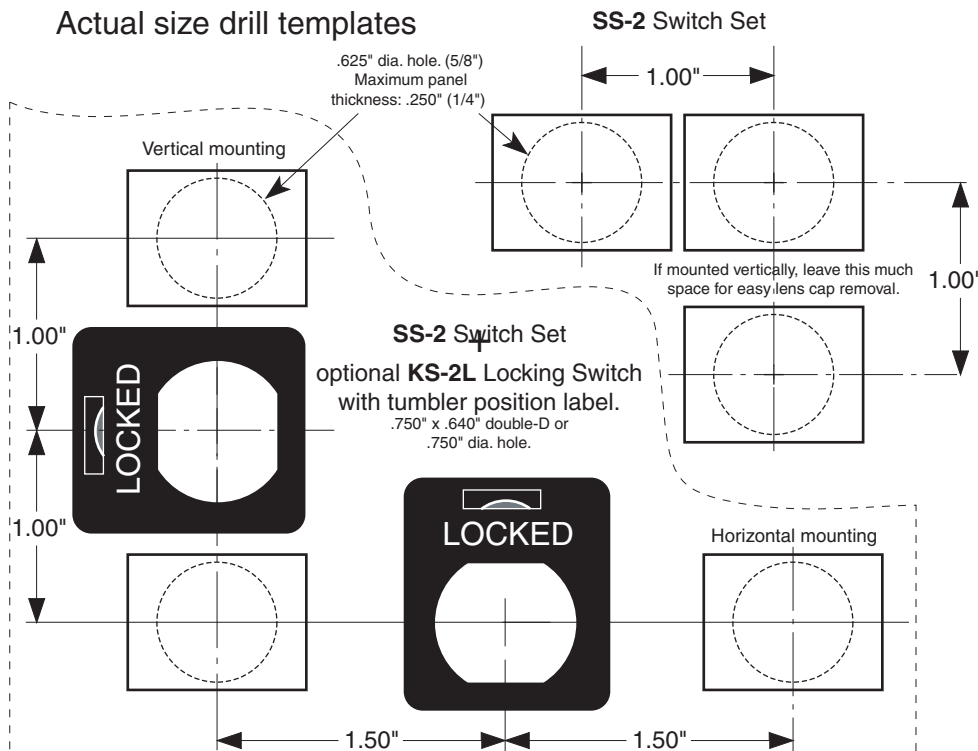
See reverse side for multiple switch set wiring.



Switch Specifications:
SPDT momentary
Contacts: 24v @0.7A
LED: 12v AC/DC @ 10ma.



Actual size drill templates



Lyntec

one

SS-2 Sequencer Switch Set

Up to 5* additional remote control locations may be added to the system with additional switch sets or with other momentary switches.

Multiple Sequencer Hookup Diagram

For LynTec MSLC and MSP MODULAR and PDS-8EK Power Sequencing Products

Custom switch legends you can print on your laserprinter

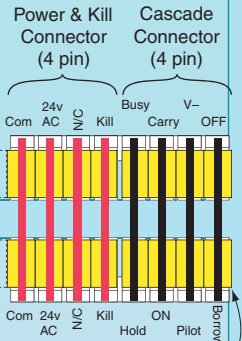
See http://www.lyntec.com/139-0309_CSLF-1_Film.pdf

Showing Low-Voltage Remote ON/OFF Control and Daisy-Chain Wiring

For single sequencer board hookup connect OFF switch normally open to OFF.

FIRST
Sequencer Board (Top)

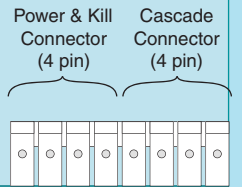
NOT in PDS-8EK
See daisy-chain connections below for wiring between PDS-8s or multiple cabinets.



To run each sequencer board as a separate system, remove the **right** Cascade Connector. Connect ON, Pilot, Com & OFF to switch set.

To isolate the **Hurry-Off** and **Kill** functions, unplug **left** Power & Kill Connector and move to the left one step, mis-mating to eliminate the board-to-board Kill connection.

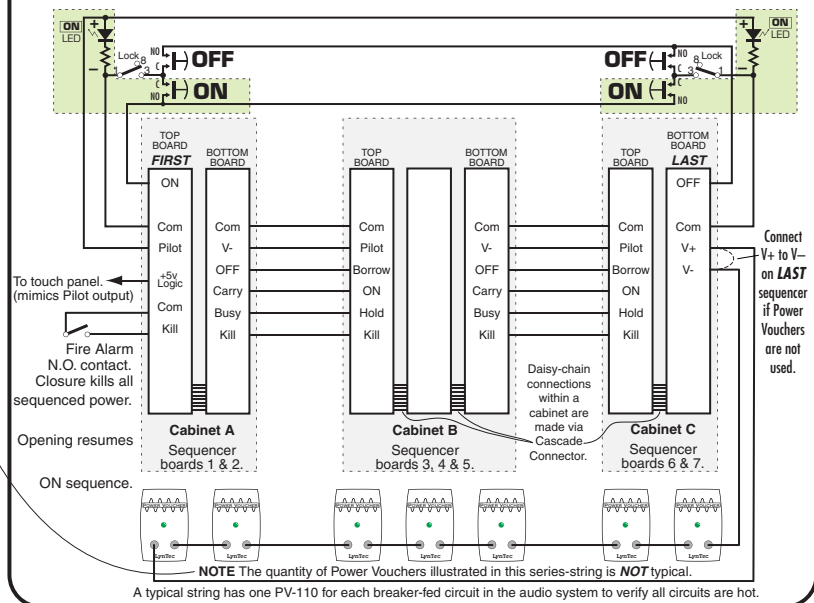
LAST
Sequencer Board (Bottom)



Kill — Fire alarm shutdown
External contact closure lights the red Kill LEDs and kills all sequenced power.
Contact opening restarts the ON sequence.

See next page for enlarged daisy-chain hookup
Low voltage control wire: 24 gauge minimum, 5,000 ft. loop max.

A typical three panel, daisy-chained, system with two locking control locations.

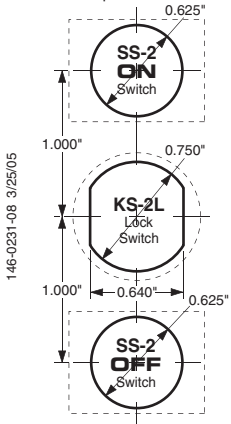


One set of the **ON** and **OFF** switches shown below are supplied unmounted as a **SS-2 Switch Set** with each LynTec sequencer cabinet. Mount in 5/8" dia. round holes in panels up to 1/4" thick.

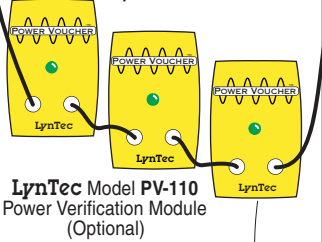


LynTec Model SS-2PL
Locking Switch Set.
(Optional)

Switch layout for field constructed panel mounting.
1/4" max. panel thickness.



Optional Power Vouchers verify all circuits are hot and no circuit breakers are tripped. ON light won't stay lit at end of ON sequence if any ac circuit fails.



LynTec Model PV-110
Power Verification Module
(Optional)

★ Parallel connect additional SS-2 switch sets for multiple remote control locations.
4 conductors, 24 ga., 5,000 ft. loop max.

Maximum number of switch sets:

All LynTec sequencers support 6 switch sets.

LynTec

Lenexa, KS (Central time zone) U.S.A.
Voice **800-724-4047** or 913-529-2233
Fax **888-722-4157** or 913-529-4157
www.LynTec.com

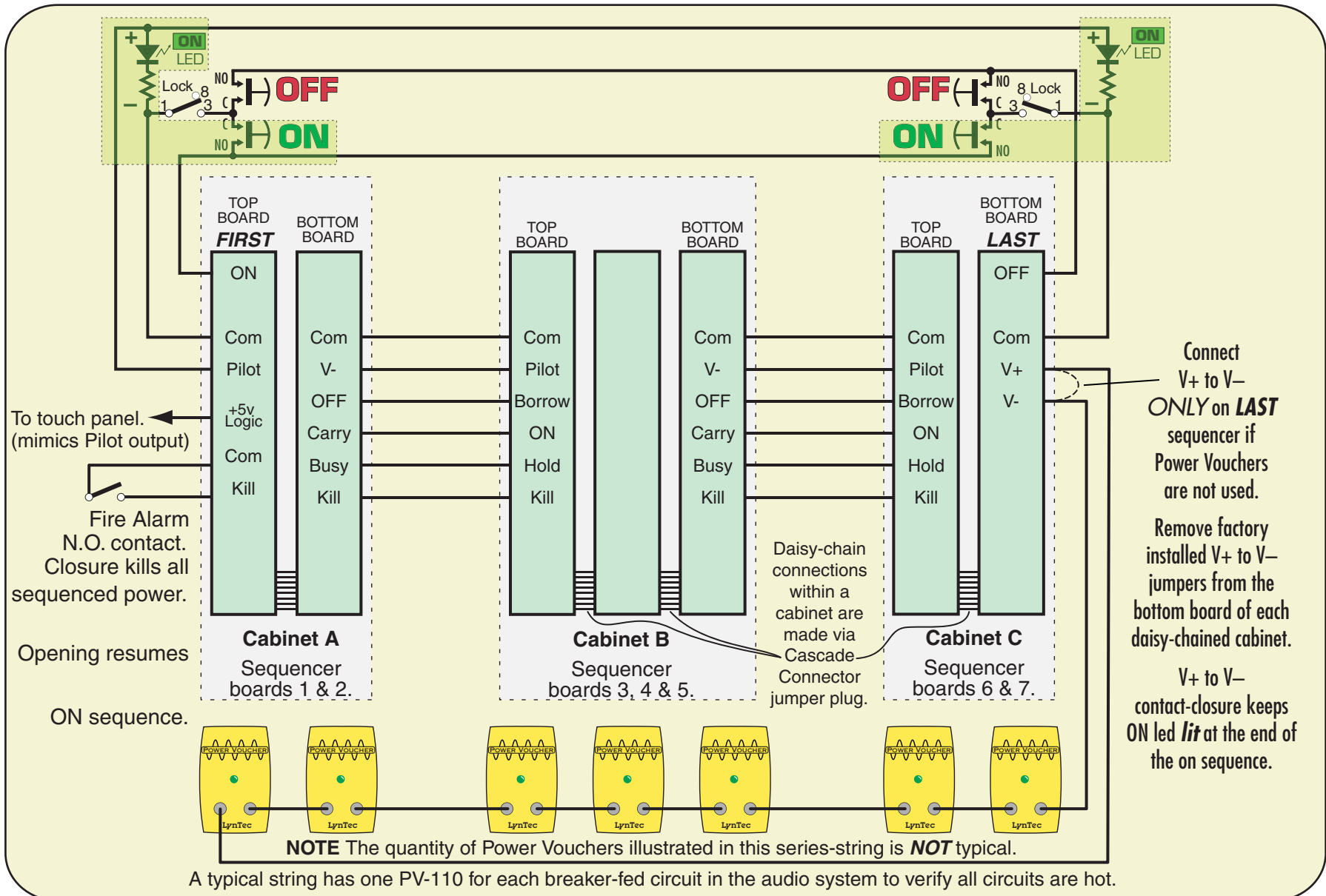
A typical LynTec three panel, daisy-chained system with two locking control locations.

For Timing Diagram and Logic levels

See http://www.lyntec.com/139-0266_Seq_Timing.pdf

Wire Requirements for Remote Controls

Basic system	ON/OFF Control from one panel only4 conductors
Basic + Kill	Add Kill function6 conductors
2 conductors to Kill control location	
Remote control at both ends9 conductors
Kill, Remote control both ends, full power verification11 conductors
Low voltage control wire: 24 gauge minimum, 5,000 ft. loop max.	



Built-in Kill, Hurry-Off and **ZipOff** (PANIC) switch option for **MSLC** and **MSP** and **PDS-8EK** series AC SEQUENCING SYSTEMS

What the functions do

Kill — EMERGENCY SHUTDOWN

Provides an *IMMEDIATE* shut down method for the sound system at the command of a fire alarm, emergency announcement system, or ZipOff switch.

Optional **ZipOff** switch, **ZOS-5K**

Provides a full AC Power shutdown within 250 milliseconds after the **ZipOff** button is pushed.

In case of a runaway oscillation or other unexpected signal which could damage the loudspeakers if sustained...

Lift the protective cover and press the ZipOff button... it latches down and lights red. The AC power sequencing system immediately zips off.

Press again to unlatch... the light goes out and the sequencer restarts to repower the system.

OR

Use the new **Hurry-Off** function at any OFF switch. 

MULTI-BOARD SHUNT R

The Kill line is an 11 ma. current source from each MS-12 Modular Sequencer or PDS-8 EK board

A voltage sensor on the Kill line determines the Kill threshold.

The Kill line has an open circuit voltage of 28 volts which must be pulled down to less than 10.5 volts to generate a Kill function. Grounding the Kill line to Common will always kill the system instantly. This current source may also be used to light the Zip-Off switch's, red LED.

The red ZipOff LED only requires 10 ma. For systems where multiple-board system's Kill lines are paralleled, a 9 v. voltage regulator chip is installed in the **ZOS-5K** which will automatically shunt the excess source current of up to 5 boards. For more than 5 boards an additional resistor must be used in parallel with the ZipOff switch LED. To prevent damage due to overheating the voltage regulator chip, the resistor should be installed as shown with **full length leads** to get the heat source away from the switch.

Total Number of boards	Shunt Resistor required	
1-5	none	
6	820Ω, 1/4w	16
7	430Ω, 1/4w	17
8	270Ω, 1/2w	18
9	200Ω, 1/2w	19
10	150Ω, 1/2w	20
11	150Ω, 1w	21
12	120Ω, 1w	22
13	100Ω, 1w	23
14	92Ω, 1w	24
15	82Ω, 1w	25
		75Ω, 2w
		68Ω, 2w
		62Ω, 2w
		56Ω, 2w
		56Ω, 2w
		51Ω, 2w
		47Ω, 2w
		47Ω, 2w
		43Ω, 2w
		39Ω, 2w

What to specify or order

For **ZipOff** switch order **ZOS-5K**. (services up to 5 Kill equipped boards)

Includes switch with ZipOff film legend and flip up security cover.

Switch mounts in 5/8" round hole in panels up to 3/16" thick.

ZOS-5K Contractor C.O.D. price: \$40.

Delivery: Stock.

Hurry-Off

The MS-12 Modular & PDS-8EK Sequencing boards have a new Hurry-Off function. If you **hold down** any OFF switch for two seconds, a "Kill without restore" function is triggered. The system shuts down within 250 milliseconds and doesn't restart until you give it a new ON command. Kinda like a DSP undo command.

How they work

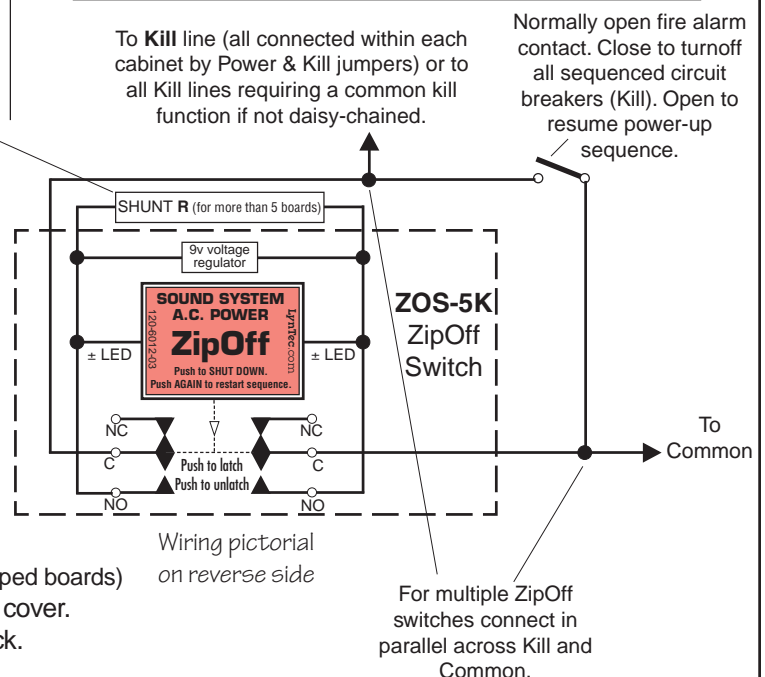
All LynTec sequencing systems have the ZipOff load shedding feature. The older SLC, SP and PDS-8's implemented it by interrupting 24v ac power.

The newer Modular sequencers, the MSLC and MSP series and the PDS-8EK, load shed when power fails, but also have a **Kill** function that is triggered by grounding the **Kill** line.

The red **Kill** LED, adjacent to the Kill terminal on the board, lights and Zip-Off is immediate. The kill line is a low current line. Long control wiring may be used without concern for loop resistances up to 32Ω. (22 gauge, up to a 1,000 ft. run [2,000 ft. loop] or a 680 ft. run of 24 ga).

The ON/OFF *latching* pilot relay remembers that the sequencer was ON. When the **Kill** line is opened, the ON sequence repeats, bringing the AC power back on.

For the Modular series control boards the **ZipOff** switch connects the Kill line to common, through the Zip-Off switch's LED, initiating the Kill function.

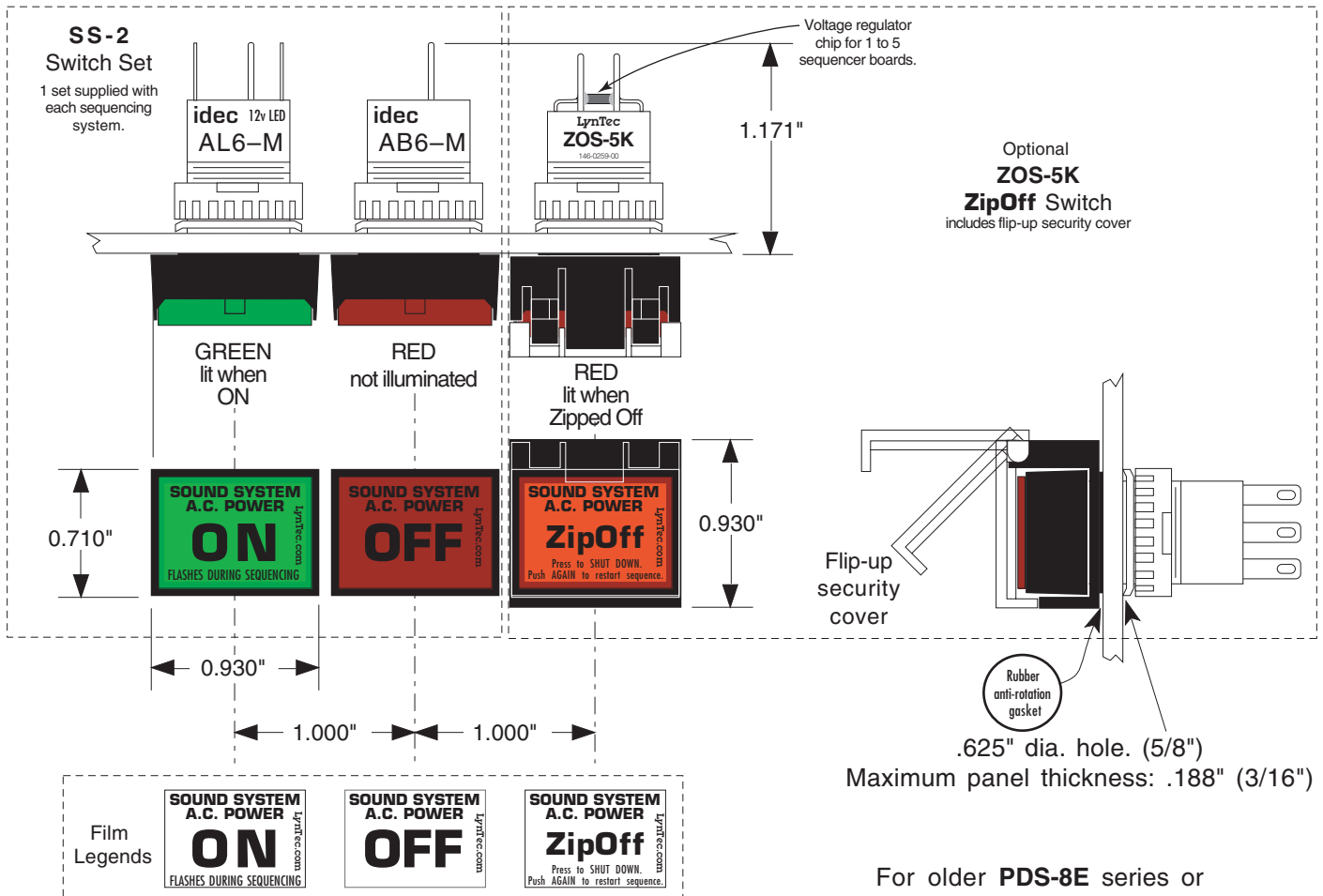


www.**LynTec**.com

8401 Melrose Drive • Lenexa, KS 66214 • Voice **800-724-4047** or 913-529-2233 • Fax **888-722-4157** or 913-529-4157

for **Modular A.C. Sequencing Systems**, models **MSLC, MSP & PDS-8EK**.

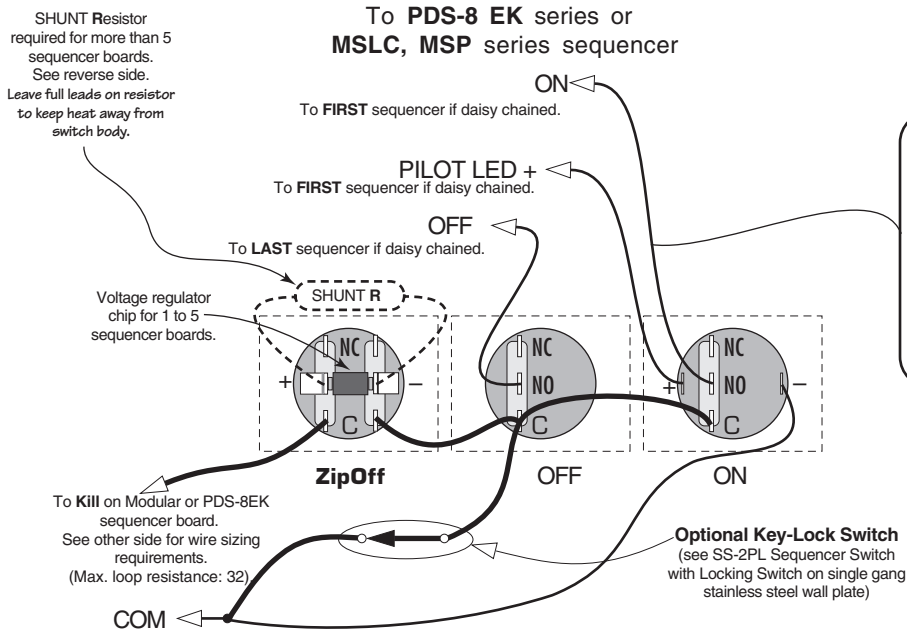
ON, OFF and ZipOff switch mounting & wiring



For older **PDS-8E** series or **SLC, SP** series sequencers see

http://www.lyntec.com/139-0137_ZOS-1.pdf

Wiring pictorial - Rear view



Wire requirements

Switch set to sequencer: 4 conductors.
 Between daisy chained Modular sequencers: 9 conductors, 11 if Power Vouchers are used.
 Up to 5,000 ft run: 22 ga.,
 5,000 to 7500 ft. run: 20 ga.
 7,500 to 10,000 ft. run: 18 ga.
 See other side for **ZipOff** wire sizing.