Applications Cookbook
Emergency Controls
Version 1.0

FOR REFERENCE ONLY
1. Refer to manufacturer’s data sheets and installation instructions prior to installation
2. Line feed 120/230/277 VAC, 60 Hz
3. Ground not shown, ground devices per applicable national and local codes are best practices
4. For emergency power situations, illustrations assume transfer switch by others upstream of shown devices
5. Line voltage load not to exceed contact rating per device specifications
6. Power packs receiving separate feeds for switched loads and self power must have both feeds on the same phase
7. All low voltage devices consume current. Device power budget is estimated for these details—additional power sources may be required. See product literature for power specifications
8. Maximum run length for analog wiring is 1000’ @ #18 AWC
9. Sensors wired in parallel will cause line voltage relay closure when occupancy is detected by any unit
10. Devices in series requiring contact closure from a single device (clock input, demand response, emergency, etc.) must follow these wiring conventions:
    - First device in sequence provides the +V to the triggering relay
    - Signal from closure attached to all devices in sequence input
    - Com from first device in sequence attached to com on all devices in sequence
11. Ultrasonic ceiling mount sensors should be located a minimum of six (6) feet from HVAC supply/return vents
12. Trough-mounted and pendant-mounted indirect lighting sources affect the operation of locally mounted sensors. Contractor is responsible for adjusting sensor locations to allow for proper operation
13. Contractor is responsible for proper sensitivity and time delay settings for non-adaptive products, following the manufacturer’s recommended placement, and field verification of circuits with respect to power pack placement
14. Contractor is responsible for coordinating the operational options of sensors and power packs with the specific work requirements:
    - Work relevant energy code requirements affect circuits to be controlled and their control characteristics
    - One power pack is required for each controlled circuit
    - Refer to power pack data sheet for power output and installation guide for maximum number of sensors connected to a power pack
    - If multiple circuits are to be controlled by a sensor, auxiliary relays may be used in conjunction with a power pack
15. Ceiling sensors mounted over doorways should be placed one (1) foot inside the threshold
16. Up to 100 Mark VII style ballasts may be controlled per daylighting zone by IRC
17. All relays shown in de-energized state
18. Individually cap off unused leads
19. One-line parenthesis use:
    - (X) Function
    - [#] Terminal
20. Plug load control—commercial receptacle P/Ns:
    STANDARD DUPLEX:
    Split control (1 outlet) CR015-1Px, CR020-1Px
    Full control (2 outlets) CR015-2Px, CR020-2Px
    DECORA®:
    Split control (1 outlet) 16252-1Px, 16352-1Px
    Full control (2 outlets) 16252-2Px, 16352-2Px

ABBREVIATIONS:
LC LumaCAN
LV Low voltage
HV High voltage switch (maintained)
LVM Low voltage switch (momentary)
Equal to Leviton 1081 (toggle) OR Leviton 56081 (Decora)
LVT Low voltage switch (maintained)
Equal to Leviton 12021-2 (toggle) or Leviton 56021-2 (Decora)
LV2 IRC low voltage switch
UON Unless otherwise noted
BLK Black
WHT White
BLU Blue
YEL Yellow
ORG Orange
VIO Violet
BRN Brown
SYMBOLS:
No Connection
Connection
Devices wired in parallel
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UL924 BYPASS, AUTO-ON/OFF, MANUAL-ON/OFF

NORMAL/EMERGENCY LINE FEED

LINE (BLK) NEU (WHT)

(ECS00-DDW)

(RED) (RED)

(YEL) (BLU)

(VID)

EMERGENCY LIGHTING LOAD

NORMAL LINE FEED

LINE (BLK) NEU (WHT)

POWERPACK OPP20-OD2

BLU (SIG)
BLU (4V/12V)
RED (COM)
BLU/WHT (MANUAL ON)
OR/VID (LOCAL SW INPUT)

LOW VOLTAGE OCCUPANCY SENSOR

OVERRIDE SWITCH 56081-2
UL924 BYPASS, 0-10V, 4-WIRE DIMMED LOAD
UL924 BYPASS, AUTO-ON/OFF, MANUAL-ON/OFF
UL924 BYPASS, GREENMAX 0-10V, 4-WIRE DIMMED LOAD
NOTES: Terminations not participating in this scheme not shown for clarity.
UL924 BYPASS DAYLIGHT HARVESTING, PROVOLT DIMMING, 2 ZONES

NOTES: Terminations not participating in this scheme not shown for clarity.
UL924 BYPASS DAYLIGHT HARVESTING, DIMMING, 2 ZONES
UL924 BYPASS, PE300 LOAD EQUAL TO 0-10V DIMMING

NORMAL/Emergency Line Feed

Circuit 1 Line Feed

Circuit 2 Line Feed

Power Extender PE300

Loading Load

Dimmer Switch

Emergency Lighting Load

Zone 2
NOTES:
1. DRC draws control power from the same power source as the controlled load.
2. Previous LumaCAN device must transmit/pass LumaCAN power to emergency power DRC.
3. Upon loss of LumaCAN power, emergency DRC goes into pre-configured emergency mode.
4. Upon restoration of LumaCAN power, emergency DRC resumes normal operation.
DRC CONFIGURATION FOR UL924 COMPLIANT OPERATION, TYPE 2

NOTES:
1. Emergency DRC draws control power from the normal power source.
2. Emergency DRC controlled load on emergency power.
3. Upon loss of normal power, emergency DRC goes into pre-configured emergency mode.
4. Upon restoration of normal power, DRC resumes normal operation.
5. Derive normal power from local lighting normal feeder (unswitched).
UL1008 TRANSFER, 2-WIRE (PHASE) DIMMED LOAD

LOCAL DIMMER SWITCH
DISTRIBUTED DIMMING SYSTEM
REMOTE DIMMING SYSTEM
UL1008 TRANSFER, PE100

NORMAL/EMERGENCY LINE FEED

CIRCUIT 2 LINE FEED

CIRCUIT 1 LINE FEED

SWITCH

POWER EXTENDER PE100

EMERGENCY LIGHTING LOAD

LIGHTING LOAD

EC000-OWN

F1

F2
UL1008 TRANSFER, PE200 LIGHTING LOAD EQUAL TO MARK X BALLASTS
REVERSE PHASE DIMMED FIXTURES WITH UL1008 TRANSFER
PE500, UL1008 TRANSFER, IP710-LFZ
UL1008 TRANSFER, 2-WIRE (PHASE) DIMMED LOAD
UL1008 TRANSFER, 2-WIRE (PHASE) DIMMED LOAD

NOTES:
1. Sense line must originate from the same phase source as the sensed circuit. Multiple UL924 devices may use the same sense line.
2. Sensed line shown as constant source.
   A. A-2000: use emergency sense terminals with internal 10A breaker
   B. i-Series: use constant module on same phase as dimmer module
UL1008 TRANSFER, 3-WIRE DIMMED LOAD

NORMAL/EMERGENCY LINE FEED
LINE (BLK)
NEU (WHT)
F1
F2
E000-D0W
EMERGENCY LIGHTING LOAD
LIGHTING LOAD
LOCAL DIMMER SWITCH,
DISTRIBUTED DIMMING SYSTEM,
REMOTE DIMMING SYSTEM
LOAD
NEU
UL1008 TRANSFER, PE200 LIGHTING LOAD EQUAL TO 3-WIRE BALLASTS
UL1008 TRANSFER, 3-WIRE DIMMED LOAD
UL1008 TRANSFER, 3-WIRE DIMMED LOAD

NOTES:
1. Sense line must originate from the same phase source as the sensed circuit. Multiple UL924 devices may use the same sense line.
2. Sensed line shown as constant source.
   A. A-2000: use emergency sense terminals with internal 10A breaker
   B. i-Series: use constant module on same phase as dimmer module
UL1008 TRANSFER, 0-10V, 4-WIRE DIMMED LOAD

NOTES:
1. Sense line must originate from the same phase source as the sensed circuit. Multiple UL924 devices may use the same sense line.
2. Sensed line shown as constant source.
   A. A-2000: use emergency sense terminals with internal 10A breaker
   B. i-Series: use constant module on same phase as dimmer module