

## **ELECTRICAL EQUIPMENT APPENDIX**

The following pages contain cutsheets of control devices and overcurrent protection devices that pertain to this project. For luminaire, lamp, and ballast information, consult the Lighting Equipment Appendix .

# DT-300 Series Dual Technology Ceiling Sensors

Architecturally appealing  
low-profile appearance

SmartSet™ automatically  
selects optimal settings  
for each space

Walk-through mode  
increases savings potential

Ultrasonic diffusers give more  
comprehensive coverage



Plug terminal wiring for  
quick and easy installation

Accepts low-voltage  
switch input for  
manual-on operation

Automatic or manual-on operation  
when used with a BZ-150 Power Pack

PROJECT

LOCATION/TYPE

## Product Overview

### Description

The DT-300 Series Dual Technology Ceiling Sensors combine the benefits of passive infrared (PIR) and ultrasonic technologies to detect occupancy. Sensors have a flat, unobtrusive appearance and provide 360 degrees of coverage.

### Operation

Low voltage DT-300 Series sensors utilize a Watt Stopper/Legrand power pack to turn lights on when both PIR and ultrasonic technologies detect occupancy. They can also work with a low voltage switch for manual-on operation. PIR technology senses motion via a change in infrared energy within the controlled area, whereas ultrasonic uses the Doppler Principle and 40KHz high frequency ultrasound. Once lights are on, detection by either technology holds them on. When no occupancy is detected for the length of the time delay, lights turn off. DT-300 Series Sensors can also be set to trigger lights on when either technology or both detect occupancy, or to require both technologies to hold lighting on.

## Features

- Advanced control logic based on RISC microcontroller provides:
- Detection Signature Processing eliminates false triggers and provides immunity to RFI and EMI
- SmartSet automatically adjusts sensitivity and time delay settings to fit occupant patterns
- Walk-through mode turns lights off three minutes after the area is initially occupied – ideal for brief visits such as mail delivery
- Available with built-in light level sensor featuring simple, one-step setup
- Sensors work with low-voltage momentary switches to provide manual control
- Patented ultrasonic diffusion technology spreads coverage to a wider area
- LEDs indicate occupancy detection
- Uses plug terminal wiring system for quick and easy installation
- Eight occupancy logic options provide the ability to customize control to meet application needs
- Available with isolated relay for integration with BAS or HVAC

### SmartSet™

DT-300 Series Sensors require no adjustment at installation, as SmartSet technology continuously monitors the controlled space to identify usage patterns. Based on these patterns, the unit automatically adjusts time delay and sensitivity settings for optimal performance and energy efficiency. Sensors assigns short delays (as low as five minutes) for times when the space is usually vacant, and longer delays (up to 30 minutes) for busier times.

### Application

DT-300 Series Dual Technology Sensors have the flexibility to work in a variety of applications, where one technology alone could cause false triggers. Ideal applications include classrooms, open office spaces, large offices and computer rooms. The DT-300 Series mounting system makes them easy to install in ceiling tiles or to junction boxes, providing the flexibility to be used in a wide range of spaces.

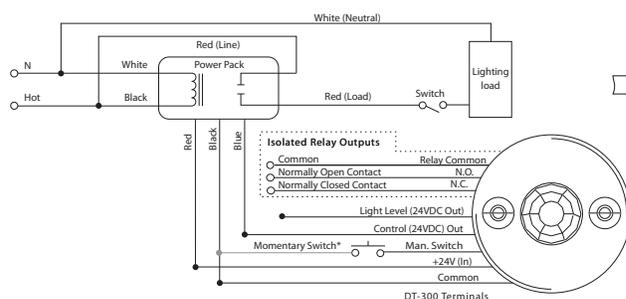


## Specifications

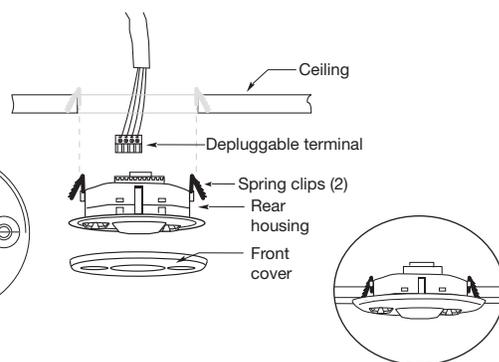
- 24 VDC/VAC
- Ultrasonic frequency: 40kHz
- Time delays: SmartSet (automatic), fixed (5, 10, 15, 20, or 30 minutes), Walk-through/Test Modes
- Sensitivity adjustment: SmartSet (automatic); reduced sensitivity (PIR); variable with trim pot (ultrasonic)
- Built-in light level sensor: 10 to 300 footcandles (107.6 to 3,229.2 lux)
- Low-voltage, momentary switch input for manual on or off operation
- DT-300 contains an isolated relay with N/O and N/C outputs; rated for 1 Amp @ 30 VDC/VAC
- Multilevel Fresnel lens provides 360° coverage for superior occupancy detection
- Mounting options: ceiling tile; 4" square junction box with double-gang mud ring
- Max DT-300s per power pack: B=2, BZ=3
- Max DT-305s per power pack: B=3, BZ=4
- Dimensions: 4.50" diameter x 1.02" deep (114.3mm x 25.9mm)
- UL and CUL listed; five-year warranty

## Wiring & Mounting

### Wiring Diagram

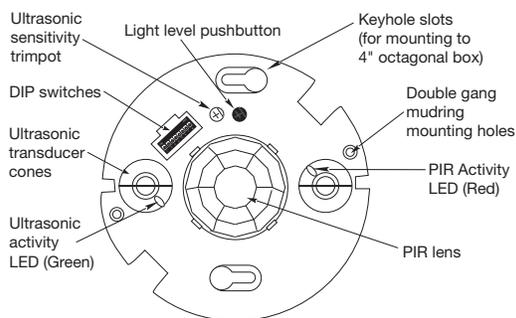


### Ceiling Mounting



## Controls & Settings

### Product Controls



### DIP Switch Settings

◀ = Factory Setting  
● = ON  
- = OFF

| Occupancy Logic | Switch# |   |   |
|-----------------|---------|---|---|
|                 | 1       | 2 | 3 |
| Standard        | -       | - | - |
| Option 1        | ●       | - | - |
| Option 2        | -       | ● | - |
| Option 3        | ●       | ● | - |
| Option 4        | -       | - | ● |
| Option 5        | ●       | - | ● |
| Option 6        | -       | ● | ● |
| Option 7        | ●       | ● | ● |

| Occupancy Logic | Trigger | Initial Occupancy | Maintain Occupancy | Re-trigger (seconds duration) |
|-----------------|---------|-------------------|--------------------|-------------------------------|
| Standard        | Both    | Either            | Either(5)          |                               |
| Option 1        | PIR     | Either            | Either(5)          |                               |
| Option 2        | PIR     | PIR               | PIR(5)             |                               |
| Option 3        | Both    | Both              | Both(5)            |                               |
| Option 4        | PIR     | PIR               | PIR(5)             |                               |
| Option 5        | Ultra   | Ultra             | Ultra(5)           |                               |
| Option 6        | Man.    | Either            | Either(30)         |                               |
| Option 7        | Man.    | Both              | Both(30)           |                               |

| Time Delay     | 4 | 5 | 6 |
|----------------|---|---|---|
| 5 sec/SmartSet | ↑ | - | - |
| 5 minutes      | - | - | ● |
| 10 min.        | ↑ | - | - |
| 10 minutes     | - | ● | - |
| 15 min.        | ↑ | - | - |
| 15 minutes     | - | ● | - |
| 20 minutes     | - | - | ● |
| 30 min.        | ↑ | - | - |

↑ = walk-through mode

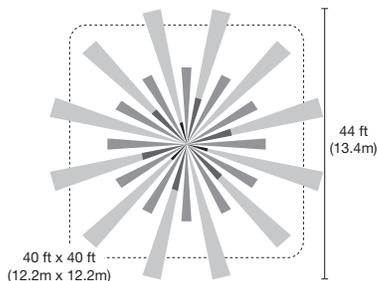
  

| LEDs     | 7 |
|----------|---|
| Disabled | - |
| Enabled  | ● |

| PIR Sensitivity | 8 |
|-----------------|---|
| Minimum         | - |
| Max./SmartSet   | ● |

## Coverage



Coverage shown is maximum and represents half-step walking motion. Under ideal conditions, coverage for half-step walking motion can reach up to 1000 ft<sup>2</sup>.

The technology control (occupancy logic) options are adjustable by user. The standard setting recommended for most applications requires both technologies to trigger on, either to hold on.

## Ordering Information

| Catalog No.                     | Voltage    | Current | Coverage  | Features                    |
|---------------------------------|------------|---------|---|-----------------------------|
| <input type="checkbox"/> DT-300 | 24 VDC/VAC | 43 mA   | up to 1000 ft <sup>2</sup> (92.9 m <sup>2</sup> ) | Isolated relay, light level |
| <input type="checkbox"/> DT-305 | 24 VDC/VAC | 35 mA   | up to 1000 ft <sup>2</sup> (92.9 m <sup>2</sup> ) |                             |

Sensors are white and use Watt Stopper power packs. Current consumption can be slightly higher when only one sensor per power pack is used.

## sPDS-60ca 24V



Color Kinetics® sPDS-60ca 24V intelligent, indoor, power/data supply is specifically designed for Color Kinetics 24 volt Chromasic® fixtures. sPDS-60ca 24V is a robust 62W power source with a DMX interface. It is used for installations using a DMX controller such as iPlayer 2, ColorDial, or a third party DMX controller. The DMX data driver conditions the supplied data to a format compatible with the fixtures. The integration of power and data simplifies wiring installation, and the selection of control configurations expands the versatility of the applications.

Push buttons on the front panel of sPDS-60ca 24V allow you to select the base address for each power supply, thus eliminating the need for additional addressing tools. After the base address has been selected, each light can be sequentially addressed or all lights can be set to a single address. All functions can be monitored from the LED display located on the front panel.

sPDS-60ca 24V is housed in a compact enclosure designed for use in dry locations and complies with National Electrical Code (NEC) requirements. The data drive circuitry has been specifically designed with short circuit protection to prevent failures due to incorrect wiring or installation.

sPDS-60ca 24V automatically accommodates supply voltages ranging from 100VAC to 240VAC using a standard IEC cable. All product and data connections are made to the external panels to shorten installation time. sPDS-60ca 24V allows the DMX data to be daisy-chained through the RJ45 terminals from one supply to the next.

### FEATURES

- Economical
- Compact size
- Ease of installation
- DMX ready
- Robust 62W power source
- Indoor rated

### sPDS-60ca 24V SPECIFICATIONS

|                               |   |
|-------------------------------|---|
| <b>POWER INPUT</b>            | 100VAC to 240VAC auto ranging (50Hz–60Hz),  |
| <b>MAX CURRENT</b>            | 1.7A at 100V, 1.5A at 120V, .75A at 240V<br>Power factor correction (PFC)                     |
| <b>POWER OUTPUT</b>           | 24VDC (62W Max.)  |
| <b>HEAT DISSIPATION</b>       | 25 percent of total power input   |
| <b>AMBIENT OPERATING TEMP</b> | 14°F to 122°F (-10°C to 50°C)   |
| <b>HOUSING</b>                | Overall dimensions: 8.8" (22.4 cm) X 4" (10.2 cm) X 2" (5.1 cm)<br>Weight: 2.0 lbs (907 g)    |
| <b>CONNECTORS</b>             | Data: RJ45 input and output connectors<br>Power: 4-pin output connectors, IES power connector |
| <b>DATA INPUT INTERFACE</b>   | Color Kinetics DMX controllers or DMX512 compatible   |
| <b>DATA OUTPUT INTERFACE</b>  | Chromasic 24V   |
| <b>LISTINGS</b>               | UL/C-UL, CE   |



ITEM# 109-000021-00 (DMX)

FOR USE UNDER U.S. PATENTS 6,016,038, 6,150,774, 6,340,868, 6,608,453, 6,777,891, 6,788,011, AND 6,806,659.

OTHER PATENTS PENDING.

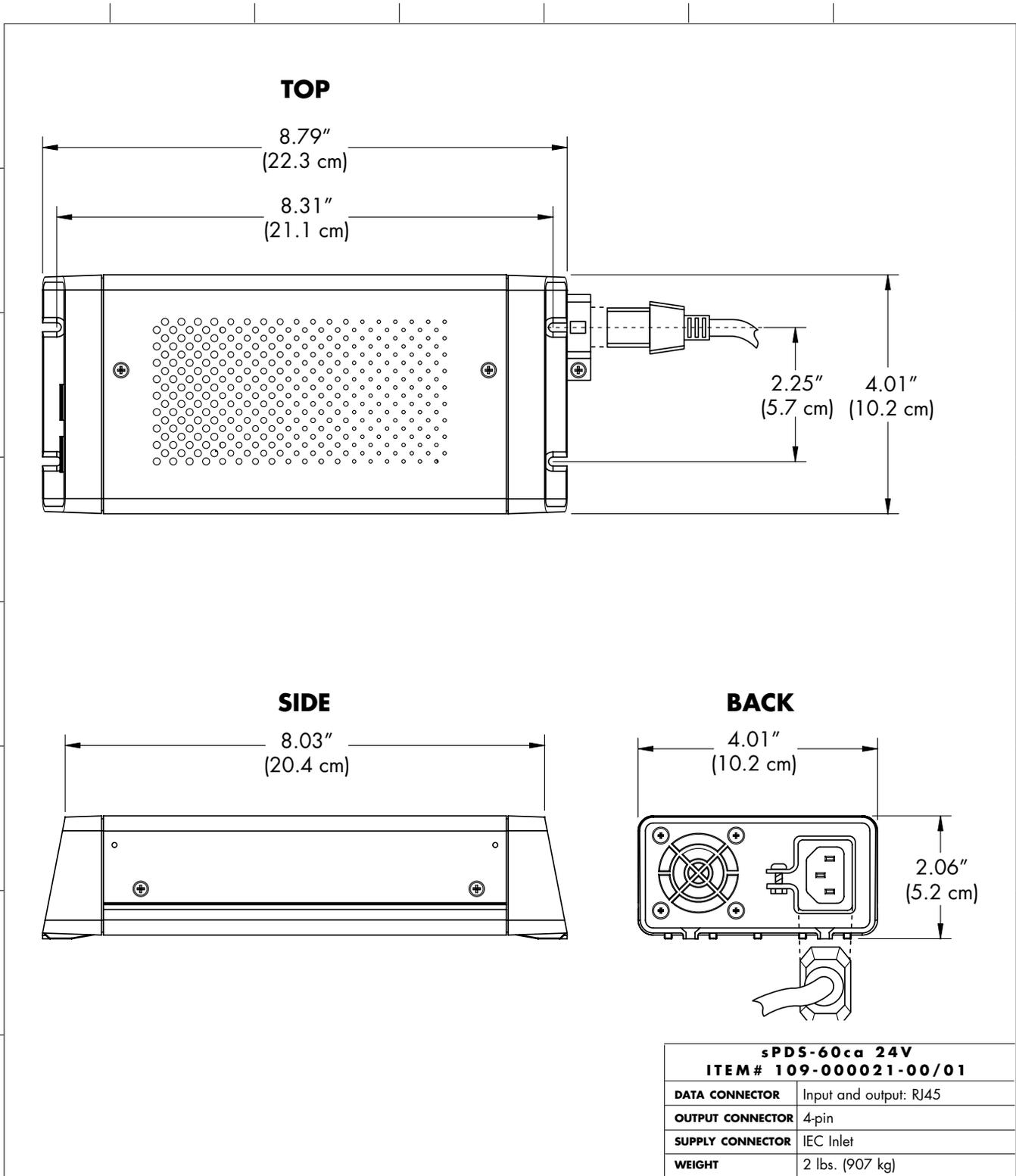
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BR0167 Rev 00

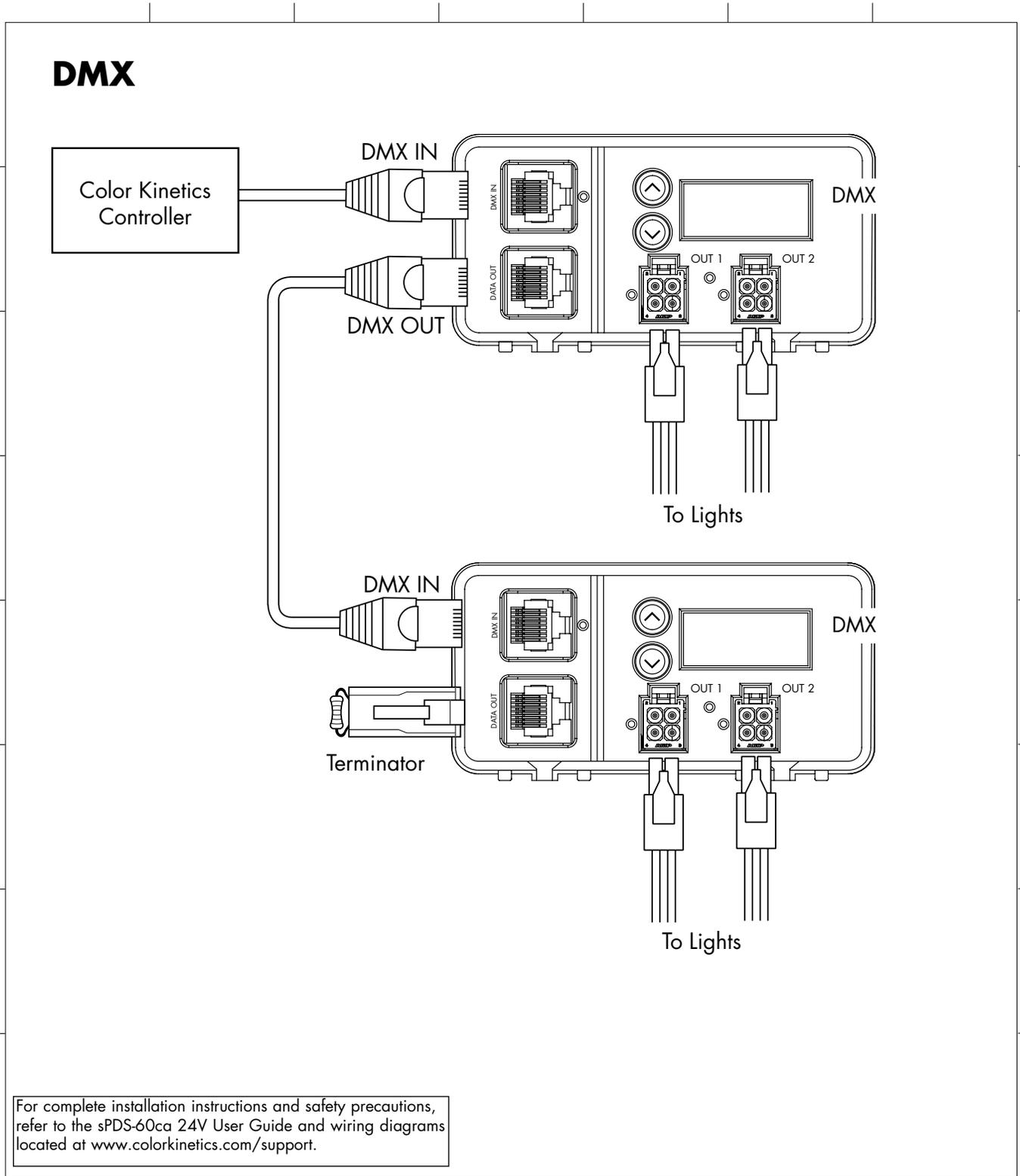
**sPDS-60ca 24V**

PHYSICAL DIMENSIONS



sPDS-60ca 24V

FUNCTIONAL FLOW DIAGRAM



For complete installation instructions and safety precautions, refer to the sPDS-60ca 24V User Guide and wiring diagrams located at [www.colorkinetics.com/support](http://www.colorkinetics.com/support).



Date: \_\_\_\_\_ Type: \_\_\_\_\_

Firm Name: \_\_\_\_\_

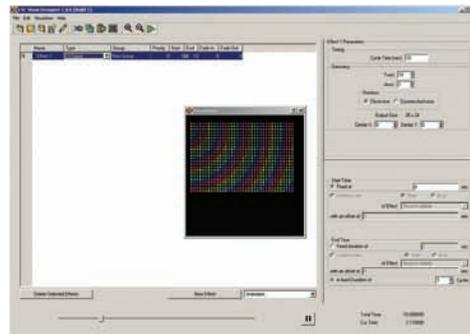
Project: \_\_\_\_\_

# Light System Manager

Versatile control and authoring for large-scale lighting installations

Optimized for medium and large-scale LED lighting installations, Light System Manager controller (LSM) is an integrated hardware and software solution comprising Light System Engine (LSE) controller hardware and Light System Composer (LSC) creative design software. With support for intricately designed installations containing thousands of LED nodes, Light System Manager offers the versatility to manage wide-ranging architectural, entertainment, and retail lighting environments.

- Easy to use — Featuring Ethernet-based control and automatic lighting system discovery, Light System Manager dramatically simplifies installation.
- Hardware support for medium and large environments — The Light System Engine controller processes light output data for up to 10,000 LED nodes, or 5,000 individual fixtures.



- Packaged with Light System Composer — Light System Composer software allows you to create and manage dynamic light shows with fully customizable effects, multi-layer editing, and unique color palettes. You can design shows with single or multiple color-changing effects, animated images, geometric patterns, and more.

- Versatile zone usage — Configure and control multiple playback zones, each with up to unique light show assignments. Light System Manager allows zone control of both indoor and outdoor fixtures within a single installation.
- Simplified control access — Designed for use with LSM, Ethernet Controller Keypad is a wall-mounted triggering device that controls light shows and fixture brightness at the touch of a button. LSM supports up to 10 keypads within a single lighting installation.
- Automatic playback control — Configure show scheduling based on a specific date, a day of the week, weekdays, weekends, or an astronomical event, such as sunrise or sunset.
- Support for IntelliWhite® lighting fixtures — Light System Manager offers visual effects with color temperature and intensity settings designed specifically for IntelliWhite white light fixtures.
- Supports the optional AuxBox expansion device — AuxBox automatically triggers up to eight light shows using any remote triggering device with a dry-contact closure. Via the AuxBox, you can trigger light shows by motion sensors, 3rd party control or sensor systems, and more.

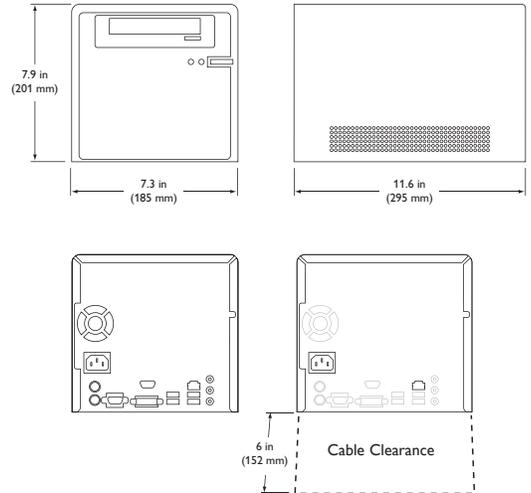
For detailed product information, please refer to the Light System Manager Product Guide at: [www.colorkinetics.com/lsc/controllers/lsm/](http://www.colorkinetics.com/lsc/controllers/lsm/)

# PHILIPS

## Specifications

Due to continuous improvements and innovations, specifications may change without notice

| Item                     | Specification                       | Details   |
|--------------------------|-------------------------------------|---|
| Electrical               | Input Voltage                       | 100 – 220 VAC, auto-switching                           |
| Capability               | Supported LED nodes or fixtures     | Up to 10,000 LED nodes, or 5,000 individual fixtures*   |
|                          | Network Data                        | KiNET™ Ethernet protocol via standard Ethernet switch** |
|                          | Playback Output                     | Light shows containing one or more visual effects       |
| Physical                 | Dimensions (Height x Width x Depth) | 7.9 x 7.3 x 11.6 in (201 x 185 x 295 mm)                |
|                          | Weight                              | 9.3 lb (4.2 kg)   |
|                          | Operating Temperature               | 32 – 95° F (0° – 35° C)                                 |
|                          | Operating Humidity                  | 0 – 90%, relative humidity, non-condensing              |
| Certification and Safety | Certification                       | FCC, CE, ETL, TUV, C-Tick, BSMI                         |
|                          | Environment                         | Indoor / Dry location                                   |



\* LSE supports up to 10,000 Chromasic® nodes, or up to 5,000 individual Chromacore® fixtures.

\*\* Use PoE (Power over Ethernet) compatible Ethernet switches, or PoE injectors, when installing a lighting system containing one or more Ethernet Controller Keypads.

## Software Requirements

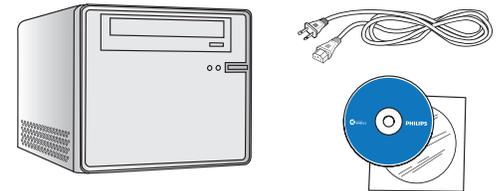
| System Requirements | Specification | PC                    | Mac                        |
|---------------------|---------------|-----------------------|----------------------------|
| OS                  |               | Windows® XP / Vista   | Mac OS X 10.4.9 or greater |
| Hardware            | Optical Drive | CD-ROM or DVD drive   | CD-ROM or DVD drive        |
|                     | Memory        | 256 MB RAM            | 256 MB RAM                 |
|                     | Disk space    | 10 MB free disk space | 10 MB free disk space      |

## Light System Manager and Accessories

| Item                                    | Item Number   | Philips 12NC |
|---|---------------|--------------|
| Light System Manager                    | 103-000015-02 | 910503700221 |
| Ethernet Controller Keypad              | 103-000023-00 | 910503700326 |
| PoE Injector (North America Power Cord) | 109-000029-00 | 910503700383 |
| PoE Injector (Europe Power Cord)        | 109-000029-01 | 910503700384 |
| AuxBox                                  | 103-000021-00 | 910503700224 |

Use Item Number when ordering in North America.

For detailed product information, please refer to the Light System Manager Product Guide at: [www.colorkinetics.com/ls/controllers/lsm/](http://www.colorkinetics.com/ls/controllers/lsm/)



## Included in the Box

|                      |
|----------------------|
| Light System Manager |
| Power cable          |
| Software CD          |



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DAS-000035-01 R00 03-09

### Features

- Astronomical time clock including day, date, sunrise, sunset functions
- Scene selection and programming
- Channel level raise and lower
- Task / sequence programming
- Scene and channel naming
- Designed and manufactured to ISO9001:2000 standards



### Overview

Surface mounting electronic time clock with astronomical facility and LCD display. Fully programmable using iCANtools™ for daily or date specific events. Connects to iCAN™ network. Keyboard allows scene selection and event functions to be enabled / disabled.

The iCAN TimeClock enables the user to have the following functions; astronomical time clock, scene programming and scene selection into one simple control panel.

### Technical Specification

#### Mechanical

**Weight:** 1 kg

**Operating temperature:** +2°C to +40°C

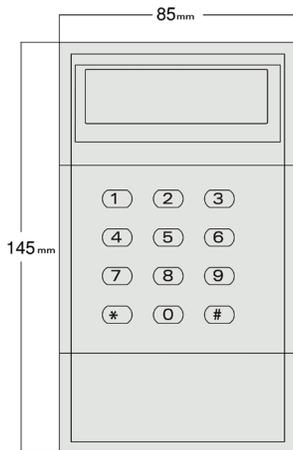
**Note:** All enclosures must be adequately ventilated

**Max storage temperature:** +60°C

**Humidity:** +5 to 95% non-condensing

**Environmental protection:** IP20

#### Dimensions



#### Electrical

**Supply:**

+12VDC (via iCANnet™ cable)

**Termination:**

**iCANnet CAT5:** Screw terminals within two part connectors, able to accept 1.5mm<sup>2</sup> stranded and solid wire.

Programming and configuration

Programming via iCANtools.

**Functionality**

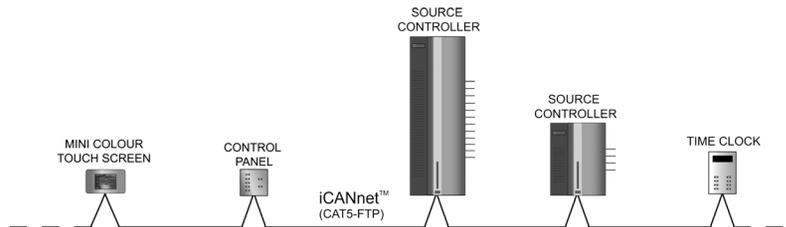
- Select scenes
- Scene programming
- Channel level raise and lower
- Scene and channel naming
- Task / sequence programming
- Time clock
- Date range - recurring events
- One shot events
- Leap year
- Daylight saving setting
- Astronomical timeclock with offset facility
- Date / day omission
- Photocell / motion sensor interaction
- Diagnostics - network

**Memory:**

FLASH memory to be able to upgrade firmware

EEPROM for 128 scene memory

#### Typical Schematic



**Voltage**

PELV

Limited current/ Limited voltage  
(wire as Class 2 wiring)



**Standards**



This product conforms to one of more of the above standards. Please contact your local Cooper Controls representative for further information

www.coopercontrol.com  
203 Cooper Circle,  
Peachtree City, GA 30269  
P: 800-553-3879  
F: 800-954-7016

## Ratings and Markings

| Type   | Current Range (A) | HACR Rated | SWD Marked | HID Marked |
|--------|-------------------|------------|------------|------------|
| 1 pole | 15 - 125          | 15 - 125   | 15 - 20    | 15 - 50    |
| 2 pole | 15 - 125          | 15 - 125   | —          | 15 - 50    |
| 3-pole | 15 - 125          | 15 - 125   | —          | 15 - 50    |

**Shipping Weight:**

|                     |         |
|---------------------|---------|
| 0.9 lbs. / 0.4 kgs. | 1 Pole  |
| 1.9 lb. / 0.9 kgs.  | 2 Poles |
| 2.9 lbs. / 1.2 kgs. | 3 Poles |

## Terminal Connectors

| Lug Information        |                  |                      |                         |
|------------------------|------------------|----------------------|-------------------------|
| Breaker Amp Rating (A) | Wire Size (AWG)  | Torque Inch-lb. (NM) | Lug Catalog No.         |
| 15 - 30                | #14 - #10 Al     | 35 (4.0)             | 3TC1Q1<br>(pkg. of 3)   |
|                        | #8 Al            | 40 (4.5)             |                         |
| 35 - 125               | #8 Al or Cu      | 40 (4.5)             | 3TC1GG20<br>(pkg. of 3) |
|                        | #3 - 1/0 Cu      | 55 (6.2)             |                         |
|                        | #6 - #4 Al or Cu | 45 (5.1)             |                         |
|                        | #3 - 2/0 Al      | 55 (6.2)             |                         |

60/75° C wire

Includes retainer clips



## Interrupting Ratings (max. RMS symmetrical amperes kA)

| Breaker Type | Poles | UL489    |     |     |     |     |          |     | IEC 60947-2 (Ics = 50% Icu) |     |          |         |          |
|--------------|-------|----------|-----|-----|-----|-----|----------|-----|-----------------------------|-----|----------|---------|----------|
|              |       | Volts AC |     |     |     |     |          |     | Volts DC                    |     | Volts AC |         | Volts DC |
|              |       | 120      | 240 | 277 | 347 | 480 | 600Y/347 | 125 | 125/250                     | 240 | 415      | 125/250 |          |
| NGG/NGB      | 1     | 65       | —   | 25  | 14  | —   | —        | 14  | —                           | 25  | —        | —       |          |
|              | 2, 3  | —        | 65  | —   | —   | 25  | 14       | —   | 14 ①                        | 65  | 25       | 14      |          |

40°C, 50/60Hz

① 2-pole only

## Ordering Information

| Type NGG/NGB 1, 2 and 3 Poles   |  |   |
|---------------------------------|--|---|
| Ampere Rating<br>I <sub>n</sub> | NGG Catalog Number<br>(Cable In - Cable Out) | NGB Catalog Number<br>(Panelboard Mounting) |
| 15                              | NGG __ B015L                                 | NGB __ B015B                                |
| 20                              | NGG __ B020L                                 | NGB __ B020B                                |
| 25                              | NGG __ B025L                                 | NGB __ B025B                                |
| 30                              | NGG __ B030L                                 | NGB __ B030B                                |
| 35                              | NGG __ B035L                                 | NGB __ B035B                                |
| 40                              | NGG __ B040L                                 | NGB __ B040B                                |
| 45                              | NGG __ B045L                                 | NGB __ B045B                                |
| 50                              | NGG __ B050L                                 | NGB __ B050B                                |
| 60                              | NGG __ B060L                                 | NGB __ B060B                                |
| 70                              | NGG __ B070L                                 | NGB __ B070B                                |
| 80                              | NGG __ B080L                                 | NGB __ B080B                                |
| 90                              | NGG __ B090L                                 | NGB __ B090B                                |
| 100                             | NGG __ B100L                                 | NGB __ B100B                                |
| 110                             | NGG __ B110L                                 | NGB __ B110B                                |
| 125                             | NGG __ B125L                                 | NGB __ B125B                                |

1 = 1 pole  
2 = 2 pole  
3 = 3 pole

L = Line & Load  
side lugs ②

1 = 1 pole  
2 = 2 pole  
3 = 3 pole

B = Load  
side lugs ③

② This "L" indicates Line Side and Load Side lugs are supplied as standard. To order an NGG without lugs, remove the L suffix.

③ This "B" indicates Load Side lugs are supplied as standard. To order an NGB without lugs, remove the B suffix.

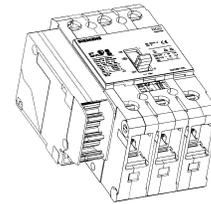
**Shunt Trip** — Contains (1) shunt trip device. A combination includes a shunt trip device and an auxiliary switch with 1A-1B contacts.

| Control Voltage |     |              | Shunt Trip     |  | Shunt Trip and Auxiliary Switch Combination |  |
|-----------------|-----|--------------|----------------|--|---|--|
| AC              | DC  | Current Draw | Catalog Number |  | Catalog Number                              |  |
| 120             | —   | 0.09A        | CQDST120       |  | CQDST120AAS                                 |  |
| 240             | —   | 0.50A        | CQDST240       |  | CQDST240AAS                                 |  |
| 277             | —   | 0.55A        | CQDST277       |  | CQDST277AAS                                 |  |
| 380-415         | —   | —            | STRGT415 ①     |  | ASTGT415 ①                                  |  |
| 480             | —   | 0.45A        | CQDST480       |  | CQDST480AAS                                 |  |
| 600             | —   | 0.50A        | CQDST600       |  | CQDST600AAS                                 |  |
| —               | 12  | 1.20A        | CQDST12        |  | CQDST12DAS                                  |  |
| —               | 24  | 0.80A        | CQDST24        |  | CQDST24DAS                                  |  |
| —               | 48  | 0.80A        | CQDST48        |  | CQDST48DAS                                  |  |
| —               | 125 | 0.35A        | CQDST125       |  | CQDST125DAS                                 |  |

① This is an IEC only rating

**Auxiliary Switch** — Contains (1) or (2) sets of “A” contacts and “B” contacts.

| Maximum Control Supply Voltage U <sub>s</sub> |     | Single Auxiliary Switch 1A-1B Contact |                                   | Double Auxiliary Switch 2A-2B Switch Contacts |                                   |
|---|-----|---------------------------------------|-----------------------------------|---|-----------------------------------|
| AC  | DC  | Catalog Number                        | Max. Operational Current          | Catalog Number                                | Maximum Operational Current       |
| 240   | 125 | CQDA1                                 | @240C AC – 15A<br>@125V DC – 0.5A | CQDA2   | @240V AC – 15A<br>@125V DC – 0.5A |



Mounted left side only, not available on single pole breakers

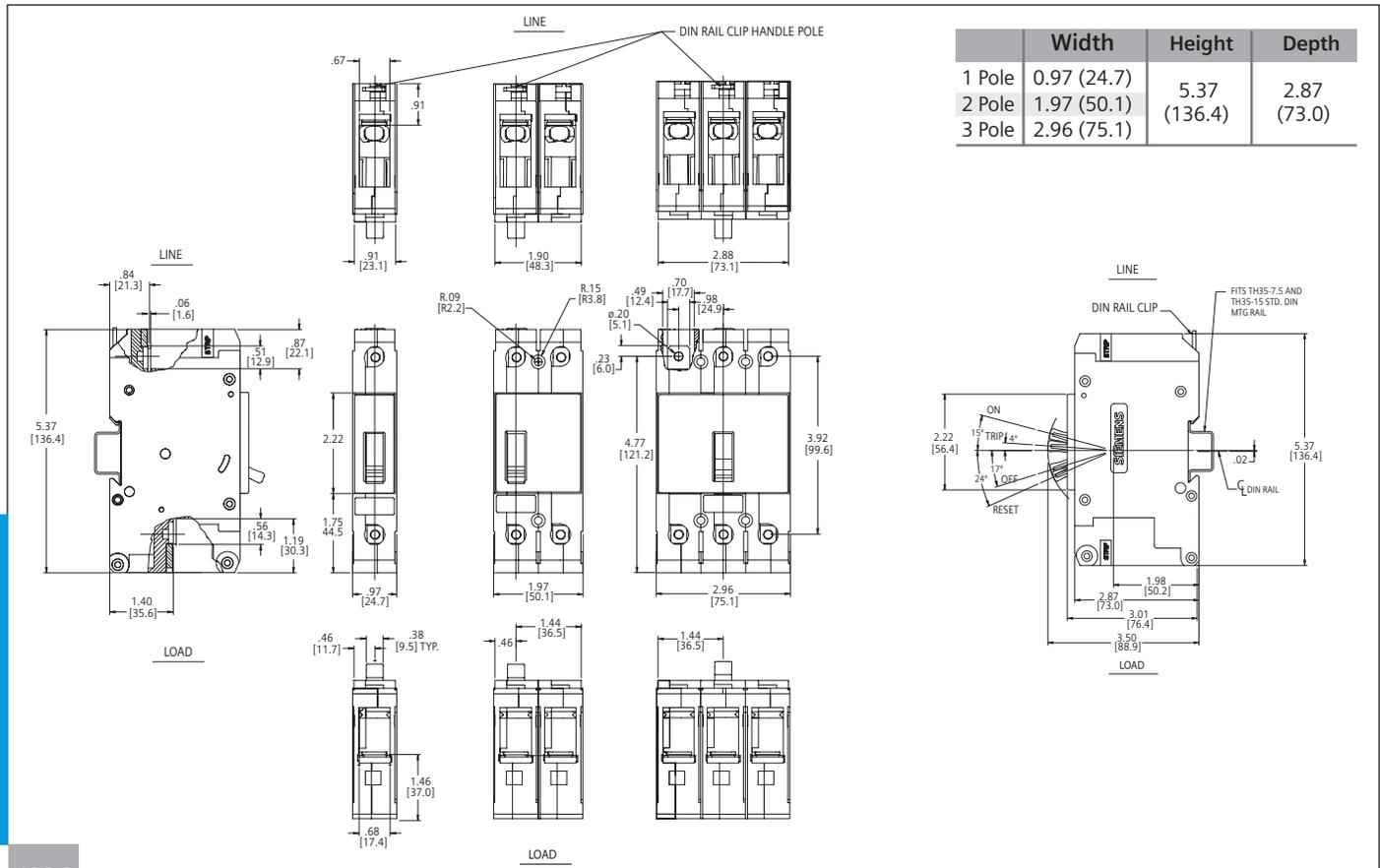
**Alarm Switch** — Contains (1) sets of “A” contacts and “B” contacts.

| Maximum Control Supply Voltage U <sub>s</sub> |     | Single Alarm Switch Catalog Number | Auxiliary and Alarm Switch Catalog Number | Maximum Operational Current       |
|---|-----|------------------------------------|---|-----------------------------------|
| AC  | DC  |                                    |   |                                   |
| 240   | 125 | CQDBA                              | CQDA1BA                                   | @240V AC – 15A<br>@125V DC – 0.5A |

**Available Accessory Combinations**

| Shunt Trip | Aux. Switch | Alarm Contact |
|------------|-------------|---------------|
| 1          | 0           | 0             |
| 0          | 1           | 0             |
| 0          | 2           | 0             |
| 1          | 1           | 0             |
| 0          | 0           | 1             |
| 0          | 1           | 1             |

**UL NGG Frame Outline Drawing – 1, 2, 3 Pole**



# VL Information Guide

## VL Circuit Breaker – FG 250A Frame



### Breaker Type

Defined by the 3rd character of the catalog number

- G – Global (UL, IEC, CE)
- H – Global, 100% Rated
- X – Global, Non-interchangeable
- Y – Global, 100% Rated, Non-interchangeable

### Trip Unit Type

Defined by the 5th character of the catalog number

- B – Thermal-Magnetic, Model 525
- N – LI, Electronic, Model 545
- P – LSI, Electronic, Model 545
- X – LIG, Electronic, Model 545
- U – LSI, Electronic, Model 545
- D – LSI, Electronic with LCD, Model 576
- E – LSI, Electronic with LCD, Model 576

### Interrupting Ratings

| Breaker Type | RMS Symmetrical Amperes (kA) |     |     |                   |                   |                   | UL or IEC  |     |
|--------------|------------------------------|-----|-----|-------------------|-------------------|-------------------|------------|-----|
|              | UL 489                       |     |     | IEC 60947-2       |                   |                   | Volts DC * |     |
|              | Volts AC                     |     |     | Volts AC          |                   |                   | Volts DC * |     |
|              | 240                          | 480 | 600 | 240               | 415               | 690               | 250        | 500 |
|              |                              |     |     | $I_{cu} / I_{cs}$ | $I_{cu} / I_{cs}$ | $I_{cu} / I_{cs}$ |            |     |
| NFG          | 65                           | 35  | 18  | 65 / 65           | 40 / 40           | 12 / 6            | 30         | 18  |
| HFG          | 100                          | 65  | 20  | 100 / 75          | 70 / 70           | 12 / 6            | 30         | 25  |
| LFG          | 200                          | 100 | 25  | 200 / 150         | 100 / 75          | 12 / 6            | 30         | 30  |

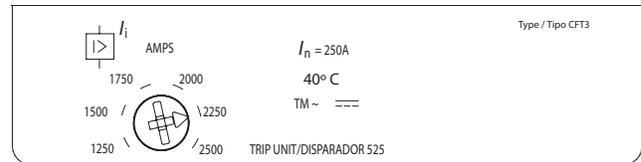
UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

\*DC applications: For 250VDC, use a 2-pole breaker. For 500-600VDC, wire as shown in Figure 1.

### Trip Unit Settings

#### Thermal Magnetic Trip Units, Model 525

| $I_N$ – Trip Unit Rating (Amps) | $I_j$ – Nominal Instantaneous Trip Adjustable Range (Amps) |      |      |      |      |      |
|---------------------------------|--|------|------|------|------|------|
| 100                             | 625  | 750  | 875  | 1000 | 1125 | 1250 |
| 110                             | 800  | 960  | 1120 | 1280 | 1440 | 1600 |
| 125                             | 800  | 960  | 1120 | 1280 | 1440 | 1600 |
| 150                             | 800  | 960  | 1120 | 1280 | 1440 | 1600 |
| 175                             | 1000   | 1200 | 1400 | 1600 | 1800 | 2000 |
| 200                             | 1000   | 1200 | 1400 | 1600 | 1800 | 2000 |
| 225                             | 1250   | 1500 | 1750 | 2000 | 2250 | 2500 |
| 250                             | 1250   | 1500 | 1750 | 2000 | 2250 | 2500 |



Trip Unit Model 525

### Trip Unit Settings

#### Electronic Trip Units, Model 545 with LI, LIN, LIG, or LIGN Trip Functions

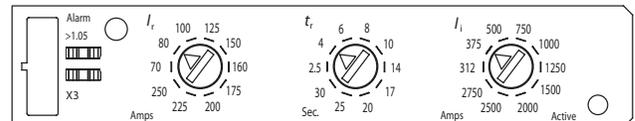
| $I_N$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amp Settings (Amps) |    |     |     |     |     |     |     |     |     |
|---------------------------------|--|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 100                             | 40                                     | 40 | 45  | 50  | 60  | 63  | 70  | 80  | 90  | 100 |
| 150                             | 60                                     | 60 | 63  | 70  | 80  | 90  | 100 | 110 | 125 | 150 |
| 250                             | 70                                     | 80 | 100 | 125 | 150 | 160 | 175 | 200 | 225 | 250 |

| $I_N$ – Trip Unit Rating (Amps) | $t_r$ – Long Time Delay Settings (Seconds) $I^2t @ 6 \times I_r$ |   |   |   |    |    |    |    |    |    |
|---------------------------------|--|---|---|---|----|----|----|----|----|----|
| 100, 150, 200                   | 2.5  | 4 | 6 | 8 | 10 | 14 | 17 | 20 | 25 | 30 |

| $I_N$ – Trip Unit Rating (Amps) | $I_j$ – Nominal Instantaneous Trip Settings (Amps) |     |     |     |      |      |      |      |      |      |
|---------------------------------|--|-----|-----|-----|------|------|------|------|------|------|
| 100                             | 125  | 150 | 200 | 300 | 400  | 500  | 600  | 800  | 1000 | 1100 |
| 150                             | 187  | 225 | 300 | 450 | 600  | 750  | 900  | 1200 | 1500 | 1650 |
| 250                             | 312  | 375 | 500 | 750 | 1000 | 1250 | 1500 | 2000 | 2500 | 2750 |

### Fixed Settings

| $I_N$ – Trip Unit Rating | $I_g$ – Ground Fault Pickup (Amps) | $t_g$ – Ground Fault Delay | $I_N$ – Neutral Protection Pick-up |
|--------------------------|------------------------------------|----------------------------|------------------------------------|
| 100                      | 80                                 | .07 sec                    | 100 A                              |
| 150                      | 120                                | .07 sec                    | 75 A                               |
| 250                      | 200                                | .07 sec                    | 125 A                              |



Trip Unit Model 545, with LI Trip Functions

# VL Information Guide

## VL Circuit Breaker – FG 250A Frame

### Trip Unit Settings

#### Electronic Trip Units, Model 545 with LSI, LSIN, LSIG, or LSIGN Trip Functions

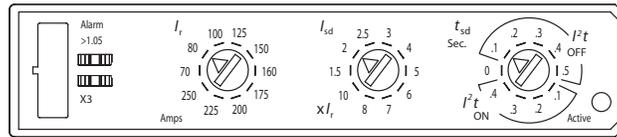
| $I_N$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amp Settings (Amps) |    |    |     |     |     |     |     |     |     |
|---------------------------------|--|----|----|-----|-----|-----|-----|-----|-----|-----|
| 100                             | 40                                     | 40 | 45 | 50  | 60  | 63  | 70  | 80  | 90  | 100 |
| 150                             | 60                                     | 60 | 63 | 70  | 80  | 90  | 100 | 110 | 125 | 150 |
| 250                             | 70                                     | 80 | 10 | 125 | 150 | 160 | 175 | 200 | 225 | 250 |

| $I_N$ – Trip Unit Rating (Amps) | $I_{sd}$ – Short Time Pick-up Settings (Amps) x $I_r$ |   |     |   |   |   |   |   |   |    |
|---------------------------------|---|---|-----|---|---|---|---|---|---|----|
| 100, 150, 250                   | 1.5   | 2 | 2.5 | 3 | 4 | 5 | 6 | 7 | 8 | 10 |

| $I_N$ – Trip Unit Rating (Amps) | $t_{sd}$ – Short Time Delay Settings (Seconds) @ $8 \times I_r$ |                |                |                |                |                |               |               |               |               |
|---------------------------------|---|----------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|
| 100, 150, 250                   | 0   | .1, $I^2t$ OFF | .2, $I^2t$ OFF | .3, $I^2t$ OFF | .4, $I^2t$ OFF | .5, $I^2t$ OFF | .1, $I^2t$ ON | .2, $I^2t$ ON | .3, $I^2t$ ON | .4, $I^2t$ ON |



Trip Unit Model 545, with LSIG Trip Functions

### Fixed Settings

| $I_N$ – Trip Unit Rating (Amps) | $t_r$ – Long Time Delay            | $I_i$ – Nominal Instantaneous Trip | $I_g$ – Ground Fault Pick-up | $t_g$ – Ground Fault Delay | $I_N$ – Neutral Protection Pick-up |
|---------------------------------|------------------------------------|------------------------------------|------------------------------|----------------------------|------------------------------------|
| 100                             | 10 sec ( $I^2t$ @ $6 \times I_r$ ) | 1100 A                             | 80 A                         | .07 sec                    | 100% $I_N$                         |
| 150                             |                                    | 1650 A                             | 120 A                        | .07 sec                    | 100% $I_N$                         |
| 250                             |                                    | 2750 A                             | 200 A                        | .07 sec                    | 50% $I_N$                          |

### Trip Unit Settings

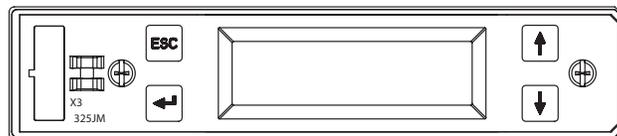
#### Electronic Trip Units with LCD, Model 576

| $I_N$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amps Range | $t_r$ – Long Time Delay Settings ( $I^2t$ @ $6 \times I_r$ ) | $I_{sd}$ – Short Time Pick-up Range | $t_{sd}$ – Short Time Delay Settings               | $I_i$ – Nominal Instantaneous Trip Range |
|---------------------------------|-------------------------------|--|-------------------------------------|--|--|
| 100                             | 40 – 100 A                    | 2.5, 4, 6, 8, 10, 14,  | 1.25 - $10 \times I_r$              | .1, .2, .3, .4, .5 sec. or $I^2t$ @ $8 \times I_r$ | 125 – 1100 A                             |
| 150                             | 60 – 150 A                    | 17, 20, 25, 30 sec.  |                                     |  | 187 – 1650 A                             |
| 250                             | 100 – 250 A                   |  |                                     |  | 313 – 2750 A                             |

| $I_N$ – Trip Unit Rating (Amps) | $I_g$ – Ground Fault Pick-up Range | $t_g$ – Ground Fault Delay Settings                 | $I_N$ – Neutral Protection Pick-up | Pre-Alarm Indication         |
|---------------------------------|------------------------------------|---|------------------------------------|------------------------------|
| 100                             | 40 – 100 A                         | .1, .2, .3, .4, .5 sec. or $I^2t$ @ $.5 \times I_N$ | 0 - 100% $\times I_r$ (Amps)       | 0 - 100% $\times I_r$ (Amps) |
| 150                             | 60 – 150 A                         |   |                                    |                              |
| 250                             | 100 – 250 A                        |   |                                    |                              |

Current settings are adjustable in 1-amp increments except Neutral Protection which is adjustable in increments of 5%.



Trip Unit Model 576

### Motor Circuit Protectors

| Amp Rating | $I_i$ – Nominal Instantaneous Trip Adjustable Range (Amps) |
|------------|--|
| 250        | 600 – 1200   |
| 250        | 1000 – 2000  |
| 250        | 1750 – 3500  |

### Molded Case Switch

| Amp Rating | Self-protective Instantaneous Override |
|------------|--|
| 250        | 3500A                                  |

# VL Information Guide

## VL Circuit Breaker – FG 250A Frame

### Terminal Connectors

| Wire Range                  | Cables per Connectors | Torque                           | lb-in. (Nm)                               | Catalog Number ①    |
|-----------------------------|-----------------------|----------------------------------|---|---------------------|
| #4 – 350 kcmil              | 1 (Cu only)           | #14 – 350                        | 150 (16.95)                               | <b>3TW1FG350</b>    |
| #4 – 350 kcmil              | 1 (Cu / Al)           | #6 – #4<br>#3 – #1<br>#1/0 – 350 | 150 (16.95)<br>200 (22.60)<br>275 (31.07) | <b>3TAW1FG350 ②</b> |
| #4 – 350 kcmil              | 1 (Cu only)           | #8 – #4<br>#3 – #1<br>#1/0 – 350 | 150 (16.95)<br>200 (22.60)<br>275 (31.07) | <b>3TCW1FG350</b>   |
| Compression Connector Kits  |                       |                                  |   |                     |
| #4 – 350 kcmil              | 1 (Cu / Al)           |                                  |   | <b>3CLF350</b>      |
| Distribution Connector Kits |                       |                                  |   |                     |
| #14 – 2/0                   | 3 (Cu only)           | #14 – #8<br>#6 – #2/0            | 40 (4.52)<br>120 (13.5)                   | <b>3TA3FG20</b>     |
| #14 – #4                    | 6 (Cu only)           | #14 – #4                         | 35 (3.95)                                 | <b>3TA6FG04</b>     |

① Packaged as 3 connectors.

② Standard connectors when an "L" suffix is used on an assembled breaker catalog number.

### Internal Accessories

#### Auxiliary and Alarm Switch Kits

| Description   | Mounting Pocket      | Catalog Number |
|---|----------------------|----------------|
| 1 Alarm Switch 1A/B ①<br>Bases AMBL2 and AMBL3                      | Left, Right ②        | <b>ASKL1</b>   |
| 2 Aux. Switches 1A + 1B<br>Base AMBL1                               | Left, Right, Neutral | <b>ASKL2</b>   |
| 2 Aux. + 1 Alarm Switch<br>1A + 1B, 1A/B Bases ①<br>AMBL2 and AMBL3 | Left, Right ②        | <b>ASKL3</b>   |

① Includes 1A and 1B contact for alarm purposes, only one of which may be installed at any time.

② Kit includes 2 bases. One for mounting switches in left pocket and another for mounting in the right.

#### Auxiliary and Alarm Switch Mounting Base only

| Description         | Mounting Pocket      | Catalog Number |
|---------------------|----------------------|----------------|
| For 2 Aux + 1 Alarm | Left                 | <b>AMBL2</b>   |
| For 2 Aux + 1 Alarm | Right                | <b>AMBL3</b>   |
| For 3 Aux           | Left, Right, Neutral | <b>AMBL1</b>   |

#### Shunt Trip

| Control Voltage | Catalog Number    |
|-----------------|-------------------|
| 48 – 60 VAC     | <b>STRLM60</b>    |
| 110 – 127 VAC   | <b>STRLN120</b>   |
| 208 – 277 VAC   | <b>STRLS277</b>   |
| 380 – 600 VAC   | <b>STRLV600</b>   |
| 24 VDC          | <b>STRLB24DC</b>  |
| 48 – 60 VDC     | <b>STRLC60DC</b>  |
| 110 – 127 VDC   | <b>STRLD125DC</b> |
| 220 – 250 VDC   | <b>STRLE250DC</b> |

Shunt trips or UVR's may be mounted in the Right Pocket only.

#### Internal Accessory Locations

| 4th Pole Accessory Pocket  | Left Accessory Pocket                       | Right Accessory Pocket   |
|----------------------------|---|--|
| Up to 3 Auxiliary Switches | Up to 3 Auxiliary Switches                  | Shunt Trip or UVR or Up to 3 Auxiliary Switches                  |
| Up to 3 Auxiliary Switches | Up to 2 Auxiliary Switches + 1 Alarm Switch | Shunt Trip or UVR or Up to 2 Auxiliary Switches + 1 Alarm Switch |

Maximum Accessories: Maximum of 9 switches total.  
Maximum of 2 alarm switches, 1 Left + 1 Right Pocket.  
Maximum of 6 switches in Left and 4th Pockets combined.

#### Auxiliary / Alarm Switches only (requires a base)

| Description                       | Catalog Number |
|-----------------------------------|----------------|
| 1 NO (normally open contact) 1A   | <b>ASWPA</b>   |
| 1 NC (normally closed contact) 1B | <b>ASWPB</b>   |

(A) Normally open contacts are open when the breaker contacts are open.

(B) Normally closed contacts are closed when the breaker contacts are open.

#### Undervoltage Release

| Control Voltage | Catalog Number    |
|-----------------|-------------------|
| 110 – 127 VAC   | <b>UVRLN120</b>   |
| 220 – 250 VAC   | <b>UVRLR240</b>   |
| 208 VAC         | <b>UVRLP208</b>   |
| 277 VAC         | <b>UVRLS277</b>   |
| 380 – 425 VAC   | <b>UVRLT415</b>   |
| 440 – 480 VAC   | <b>UVRLU480</b>   |
| 600 VAC         | <b>UVRLV600</b>   |
| 12 VDC          | <b>UVRLA12DC</b>  |
| 24 VDC          | <b>UVRLB24DC</b>  |
| 48 VDC          | <b>UVRLC48DC</b>  |
| 60 VDC          | <b>UVRLG60DC</b>  |
| 110 – 127 VDC   | <b>UVRLD125DC</b> |
| 220 – 250 VDC   | <b>UVRLE250DC</b> |

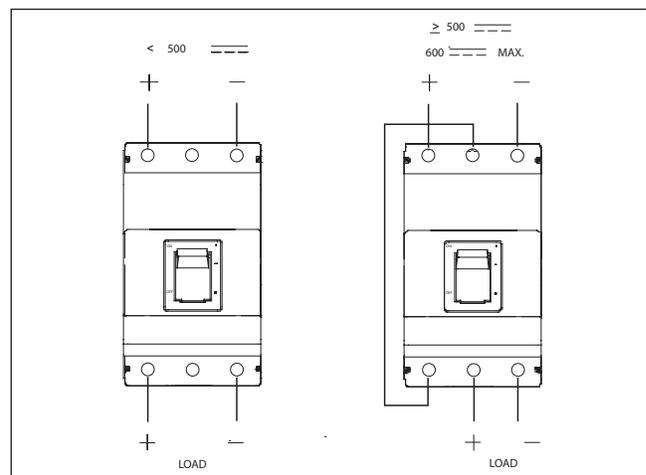


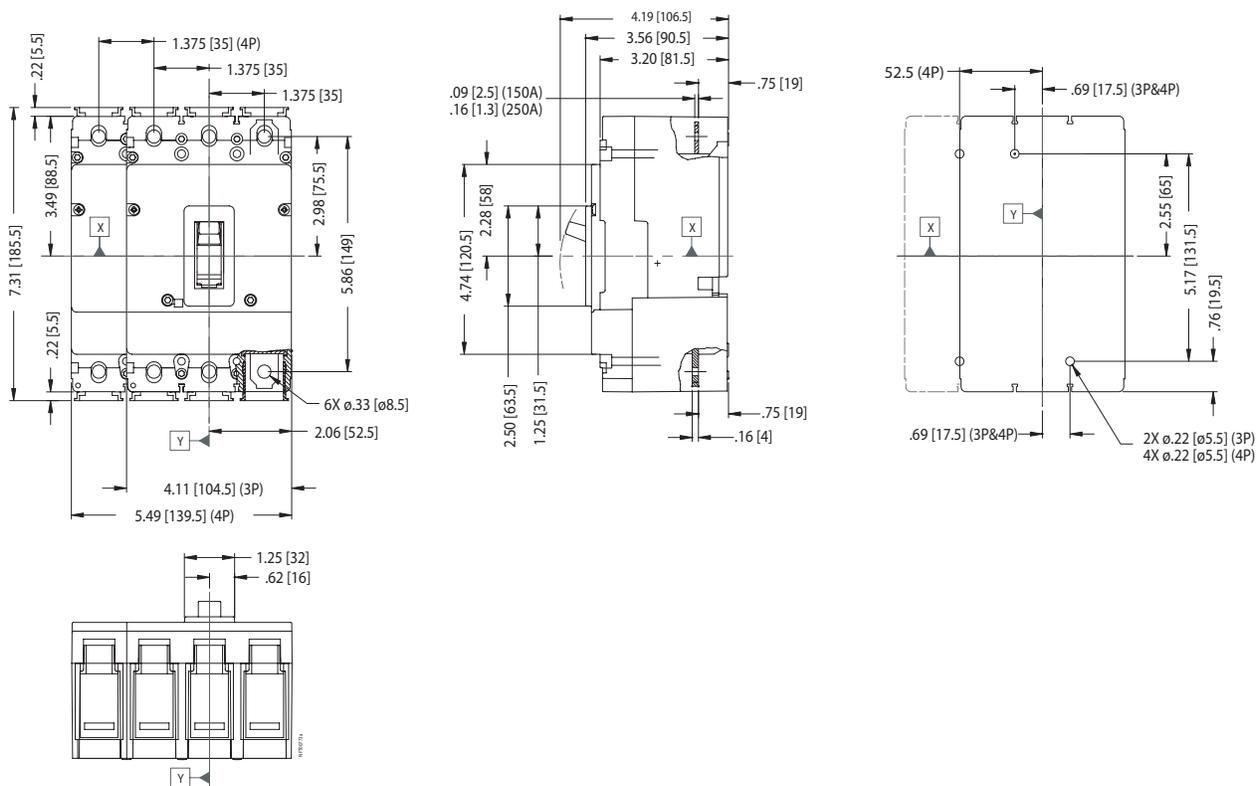
Figure 1

# VL Information Guide

## VL Circuit Breaker – FG 250A Frame

### Dimensions

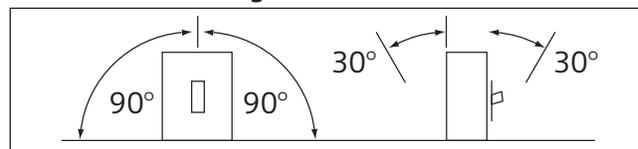
(complete breaker)



### Shipping Weight, lbs. (kg)

| Poles | Frame Only  | Trip Unit   |            | Complete Breaker |
|-------|-------------|-------------|------------|------------------|
|       |             | Thermal-mag | Electronic |                  |
| 2,3   | 3.45 (1.56) | 1.35 (.62)  | 1.60 (.72) | 6.2 (2.8)        |
| 4     | 4.40 (2.0)  | 1.8 (.82)   | 2.05 (.93) | 7.9 (3.6)        |

### Permissible Mounting Positions



# VL Information Guide

## VL Circuit Breaker – NG 1200A Frame



### Breaker Type

Defined by the 3rd character of the catalog number

- G – Global (UL, IEC, CE)
- H – Global, 100% Rated
- X – Global, Non-interchangeable
- Y – Global, 100% Rated, Non-interchangeable

### Trip Unit Type

Defined by the 5th character of the catalog number

- B – Thermal-Magnetic, Model 525
- N – LI, Electronic, Model 545
- P – LSI, Electronic, Model 545
- X – LIG, Electronic, Model 545
- U – LSIG, Electronic, Model 545
- D – LSI, Electronic with LCD, Model 576
- E – LSIG, Electronic with LCD, Model 576

### Interrupting Ratings

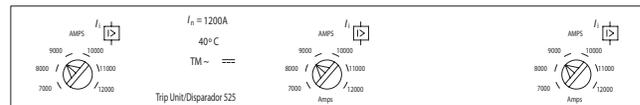
| Breaker Type | RMS Symmetrical Amperes (kA) |     |     |                   |                   |                   | UL or IEC |     |
|--------------|------------------------------|-----|-----|-------------------|-------------------|-------------------|-----------|-----|
|              | UL 489                       |     |     | IEC 60947-2       |                   |                   | Volts DC* |     |
|              | Volts AC                     |     |     | Volts AC          |                   |                   | Volts DC* |     |
|              | 240                          | 480 | 600 | 240               | 415               | 690               | 250       | 500 |
|              |                              |     |     | $I_{cu} / I_{cs}$ | $I_{cu} / I_{cs}$ | $I_{cu} / I_{cs}$ |           |     |
| NNG          | 65                           | 35  | 25  | 65 / 35           | 50 / 25           | 20 / 10           | 22        | 35  |
| HNG          | 100                          | 65  | 35  | 100 / 50          | 70 / 35           | 30 / 15           | 25        | 50  |
| LNG          | 200                          | 100 | 65  | 200 / 100         | 100 / 50          | 35 / 17           | 42        | 65  |

UL / CSA / NOM 40°C 50/60Hz IEC 40°C 50/60Hz

\*DC applications: For 250VDC, use a 2-pole breaker. For 500-600VDC, wire as shown in Figure 1.

### Thermal Magnetic Trip Units, Model 525

| $I_n$ – Trip Unit Rating (Amps) | $I_i$ – Nominal Instantaneous Trip Adjustable Range (Amps) |
|---------------------------------|--|
| 800                             | 4000 – 8000  |
| 900                             | 6000 – 10000   |
| 1000                            | 6000 – 10000   |
| 1200                            | 7000 – 12000   |



Trip Unit Model 525

### Trip Unit Settings

#### Electronic Trip Units, Model 545 with LI, LIN, LIG, or LIGN Trip Functions (Ground fault setting is non-adjustable.)

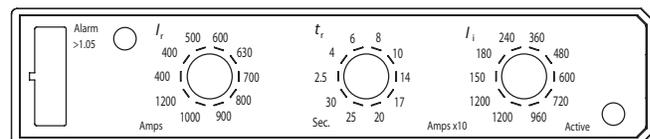
| $I_n$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amp Settings (Amps) |     |     |     |     |     |     |     |      |      |
|---------------------------------|--|-----|-----|-----|-----|-----|-----|-----|------|------|
| 800                             | 300                                    | 300 | 315 | 350 | 400 | 500 | 600 | 630 | 700  | 800  |
| 1000                            | 400                                    | 400 | 400 | 500 | 600 | 630 | 700 | 800 | 900  | 1000 |
| 1200                            | 400                                    | 400 | 500 | 600 | 630 | 700 | 800 | 900 | 1000 | 1200 |

| $I_n$ – Trip Unit Rating (Amps) | $t_r$ – Long Time Delay Settings (Seconds) $I^2t @ 6 \times I_r$ |   |   |   |    |    |    |    |    |    |
|---------------------------------|--|---|---|---|----|----|----|----|----|----|
| 800, 1000, 1200                 | 2.5  | 4 | 6 | 8 | 10 | 14 | 17 | 20 | 25 | 30 |

| $I_n$ – Trip Unit Rating (Amps) | $I_i$ – Nominal Instantaneous Trip Settings (Amps) |      |      |      |      |      |      |      |       |       |
|---------------------------------|--|------|------|------|------|------|------|------|-------|-------|
| 800                             | 1000   | 1200 | 1600 | 2400 | 3200 | 4000 | 4800 | 6400 | 8000  | 8800  |
| 1000                            | 1250   | 1500 | 2000 | 3000 | 4000 | 5000 | 6000 | 8000 | 10000 | 11000 |
| 1200                            | 1500   | 1800 | 2400 | 3600 | 4800 | 6000 | 7200 | 9600 | 12000 | 12000 |

### Fixed Settings

| $I_n$ – Trip Unit Rating | $I_g$ – Ground Fault Pickup (Amps) | $t_g$ – Ground Fault Delay | $I_N$ – Neutral Protection Pick-up (1) |
|--------------------------|------------------------------------|----------------------------|--|
| 800                      | 480 A                              | .25 sec                    | 400 A                                  |
| 1000                     | 600 A                              | .32 sec                    | 500 A                                  |
| 1200                     | 720 A                              | .32 sec                    | 600 A                                  |



Trip Unit Model 545, with LI Trip Functions

(1) The neutral phase is only protected on a 4-pole breaker.

# VL Information Guide

## VL Circuit Breaker – NG 1200A Frame

### Trip Unit Settings

Electronic Trip Units, Model 545 with LSI, LSIN, LSIG, or LSIGN Trip Functions ① (Instantaneous setting is non-adjustable.)

| $I_N$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amp Settings (Amps) |     |     |     |     |     |     |     |      |      |
|---------------------------------|--|-----|-----|-----|-----|-----|-----|-----|------|------|
| 800                             | 300                                    | 300 | 315 | 350 | 400 | 500 | 600 | 630 | 700  | 800  |
| 1000                            | 400                                    | 400 | 400 | 500 | 600 | 630 | 700 | 800 | 900  | 1000 |
| 1200                            | 400                                    | 400 | 500 | 600 | 630 | 700 | 800 | 900 | 1000 | 1200 |

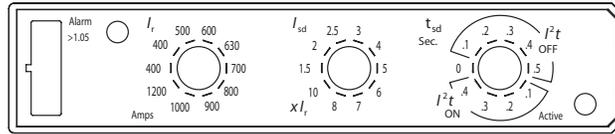
| $I_N$ – Trip Unit Rating (Amps) | $I_{sd}$ – Short Time Pick-up Settings (Amps) x $I_r$ |   |     |   |   |   |   |   |   |    |
|---------------------------------|---|---|-----|---|---|---|---|---|---|----|
| 800, 1000, 1200                 | 1.5   | 2 | 2.5 | 3 | 4 | 5 | 6 | 7 | 8 | 10 |

| $I_N$ – Trip Unit Rating (Amps) | $t_{sd}$ – Short Time Delay Settings (Seconds) @ $8xI_r$ |                |                |                |                |                |               |               |               |               |
|---------------------------------|--|----------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|
| 800, 1000, 1200                 | 0  | .1, $I^2t$ OFF | .2, $I^2t$ OFF | .3, $I^2t$ OFF | .4, $I^2t$ OFF | .5, $I^2t$ OFF | .1, $I^2t$ ON | .2, $I^2t$ ON | .3, $I^2t$ ON | .4, $I^2t$ ON |

### Fixed Settings

| $I_N$ – Trip Unit Rating (Amps) | $t_r$ – Long Time Delay            | $I_i$ – Nominal Instantaneous Trip | $I_g$ – Ground Fault Pick-up | $t_g$ – Ground Fault Delay | $I_N$ – Neutral Protection Pick-up |
|---------------------------------|------------------------------------|------------------------------------|------------------------------|----------------------------|------------------------------------|
| 800                             |                                    | 8800 A                             | 480 A                        | .25 sec                    | 400 A                              |
| 1000                            | 10 sec ( $I^2t$ @ $6 \times I_r$ ) | 11000 A                            | 600 A                        | .32 sec                    | 500 A                              |
| 1200                            |                                    | 12000 A                            | 720 A                        | .32 sec                    | 600 A                              |

① Neutral phase is only protected on a 4-pole breaker.



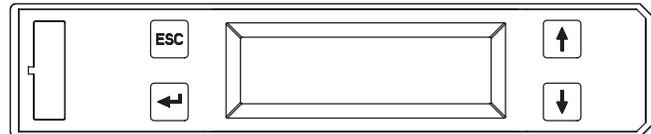
Trip Unit Model 545, with LSI Trip Functions

### Trip Unit Settings

Electronic Trip Units with LCD, Model 576 with LSI or LSIG Trip Functions

| $I_N$ – Trip Unit Rating (Amps) | $I_r$ – Continuous Amps Range | $t_r$ – Long Time Delay Settings ( $I^2t$ @ $6 \times I_r$ ) | $I_{sd}$ – Short Time Pick-up Range       | $t_{sd}$ – Short Time Delay Settings  | $I_i$ – Nominal Instantaneous Trip Range |
|---------------------------------|-------------------------------|--|---|---|--|
| 800                             | 300 – 800 A                   |  | 1.25 - $10 \times I_r$<br>(8,000 A max.)  |   | 1000 – 8800 A                            |
| 1000                            | 400 – 1000 A                  | 2.5, 4, 6, 8, 10, 14, 17, 20, 25, 30 sec                     | 1.25 - $10 \times I_r$<br>(10,000 A max.) | .1, .2, .3, .4, .5 sec. ( $I^2t$ off) or $I^2t$ @ $8 \times I_r$ ( $I^2t$ on) | 1250 – 11000 A                           |
| 1250                            | 400 – 1200A                   |  | 1.25 - $10 \times I_r$<br>(10,800 A max.) |   | 1500 – 12000 A                           |

| $I_N$ – Trip Unit Rating (Amps) | $I_g$ – Ground Fault Pick-up Range | $t_g$ – Ground Fault Delay Settings  | Pre-Alarm Indication     |
|---------------------------------|------------------------------------|--|--------------------------|
| 800                             | 320 – 800 A                        | .1, .2, .3, .4, .5 sec. ( $I^2t$ off) or $I^2t$ @ $.5 \times I_N$ ( $I^2t$ on) | 80 - 100% x $I_r$ (Amps) |
| 1000                            | 400 – 1000 A                       |  |                          |
| 1200                            | 400 – 1200 A                       |  |                          |



Trip Unit Model 576

Current settings are adjustable in 1-amp increments except Neutral Protection which is adjustable in increments of 5%.

### Motor Circuit Protectors

| Amp Rating | $I_i$ – Nominal Instantaneous Trip Adjustable Range (Amps) |
|------------|--|
| 1200       | 7000 – 12000   |

### Molded Case Switch

| Amp Rating | Self-protective Instantaneous Override |
|------------|--|
| 1200       | 12000A                                 |

# VL Information Guide

## VL Circuit Breaker – NG 1200A Frame

### Terminal Connectors

| Wire Range                 | Cables per Lug               | Torque lb-in. (Nm) | Catalog Number       |
|----------------------------|------------------------------|--------------------|----------------------|
| 1/0 - 500 kcmil            | 4 (Cu / Al)                  | 375 (42.4)         | <b>3TA4NG500</b> ① ② |
| 500 - 750 kcmil            | 3 (Cu / Al)                  | 375 (42.4)         | <b>3TA3NG750</b> ②   |
| 1/0 - 500 kcmil            | 4 (Cu / Al)                  | 375 (42.4)         | <b>3TA4NG500H</b> ②  |
| 1/0 - 500 kcmil            | 4 (Cu) {90°C, 100% breakers} | 375 (42.4)         | <b>3TC4NG500</b> ②   |
| Compression Connector Kits |                              |                    |                      |
| 1/0 - 500 kcmil            | 4 (Cu / Al)                  |                    | <b>12CLN500</b>      |

① Standard connector when an "L" suffix is used on an assembled breaker catalog number.

② Package of 3 connectors.

### Internal Accessories

| Auxiliary and Alarm Switch Kits                  |                 |                |
|--|-----------------|----------------|
| Description                                      | Mounting Pocket | Catalog Number |
| 2 Aux + 2 Alarm Switches<br>(2NO + 2NC + 1 base) | Left            | <b>ASKP3</b>   |
| 4 Aux. Switches<br>(2NO + 2NC + 1 base)          | Left, Right     | <b>ASKP4</b>   |

| Auxiliary and Alarm Switch Mounting Base only |                 |                |
|---|-----------------|----------------|
| Description                                   | Mounting Pocket | Catalog Number |
| For 2 Aux + 2 Alarm                           | Left            | <b>AMBP2</b>   |
| For 4 Aux                                     | Left, Right     | <b>AMBP1</b>   |

| Shunt Trip      |                   |
|-----------------|-------------------|
| Control Voltage | Catalog Number    |
| 48 – 60 VAC     | <b>STRPM60</b>    |
| 110 – 127 VAC   | <b>STRPN120</b>   |
| 208 – 277 VAC   | <b>STRPS277</b>   |
| 380 – 600 VAC   | <b>STRPV600</b>   |
| 24 VDC          | <b>STRPB24DC</b>  |
| 48 – 60 VDC     | <b>STRPC60DC</b>  |
| 110 – 127 VDC   | <b>STRPD125DC</b> |
| 220 – 250 VDC   | <b>STRPE250DC</b> |

Shunt trips or UVR's may be mounted in the Right Pocket only.

| Internal Accessory Locations                       |  |
|--|--|
| Left Accessory Pocket                              | Right Accessory Pocket                               |
| Up to 4 Auxiliary Switches ①                       | Shunt Trip or UVR or<br>Up to 4 Auxiliary Switches ① |
| Up to 2 Auxiliary Switches ② +<br>2 Alarm Switches | Shunt Trip or UVR or<br>Up to 4 Auxiliary Switches ① |

Maximum Accessories: Maximum of 8 switches total.

Maximum of 2 alarm switches, Left Pocket only.

Maximum of 4 switches in Left and 4th Pockets combined.

① Max load is 5A per switch when 4 switches are mounted.

② Max load is 10A per switch.

| Auxiliary / Alarm Switches only (requires a base) |                |
|---|----------------|
| Description                                       | Catalog Number |
| 1 NO (normally open contact)                      | <b>ASWPA</b>   |
| 1 NC (normally closed contact)                    | <b>ASWPB</b>   |

Normally open contacts are open when the breaker contacts are open.  
Normally closed contacts are closed when the breaker contacts are open.

| Undervoltage Release |                   |
|----------------------|-------------------|
| Control Voltage      | Catalog Number    |
| 110 – 127 VAC        | <b>UVRPN120</b>   |
| 220 – 250 VAC        | <b>UVRPR240</b>   |
| 208 VAC              | <b>UVRPP208</b>   |
| 277 VAC              | <b>UVRPS277</b>   |
| 380 – 425 VAC        | <b>UVRPT415</b>   |
| 440 – 480 VAC        | <b>UVRPU480</b>   |
| 600 VAC              | <b>UVRPV600</b>   |
| 12 VDC               | <b>UVRPA12DC</b>  |
| 24 VDC               | <b>UVRPB24DC</b>  |
| 48 VDC               | <b>UVRPC48DC</b>  |
| 60 VDC               | <b>UVRPG60DC</b>  |
| 110 – 127 VDC        | <b>UVRPD125DC</b> |
| 220 – 250 VDC        | <b>UVRPE250DC</b> |

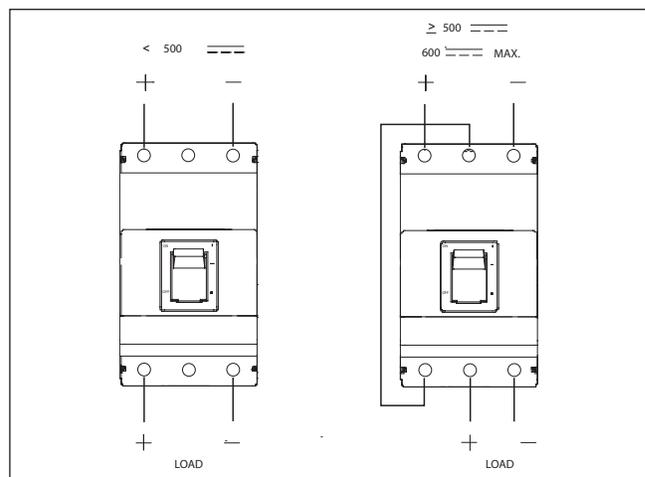


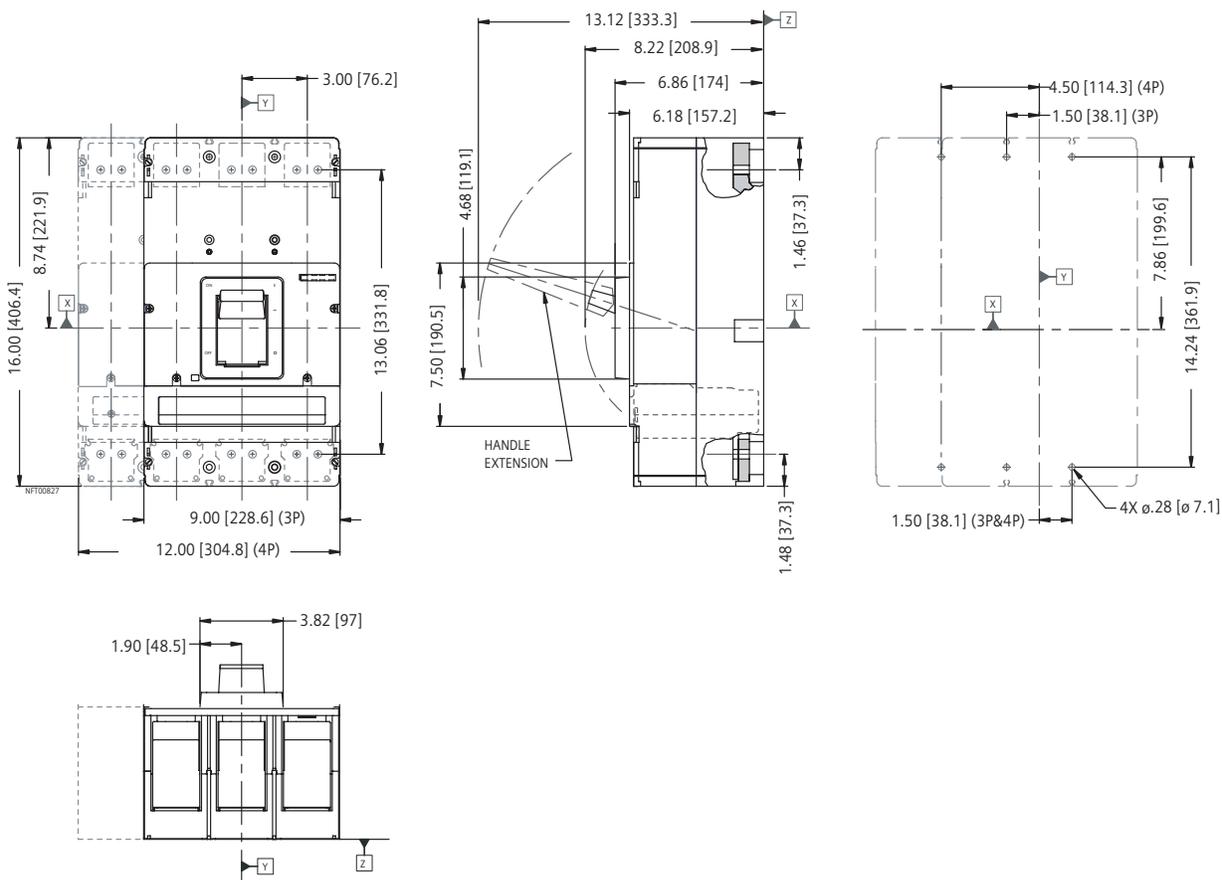
Figure 1

# VL Information Guide

## VL Circuit Breaker – NG 1200A Frame

### Dimensions

(complete breaker)



### Shipping Weight, lbs. (kg)

| Poles | Frame       | Trip Unit  | Complete Breaker |
|-------|-------------|------------|------------------|
| 2,3   | 46.3 (21.0) | 8.8 (4.0)  | 55.1 (25.0)      |
| 4     | 60.6 (27.5) | 13.2 (6.0) | 73.8 (33.5)      |

### Permissible Mounting Positions

