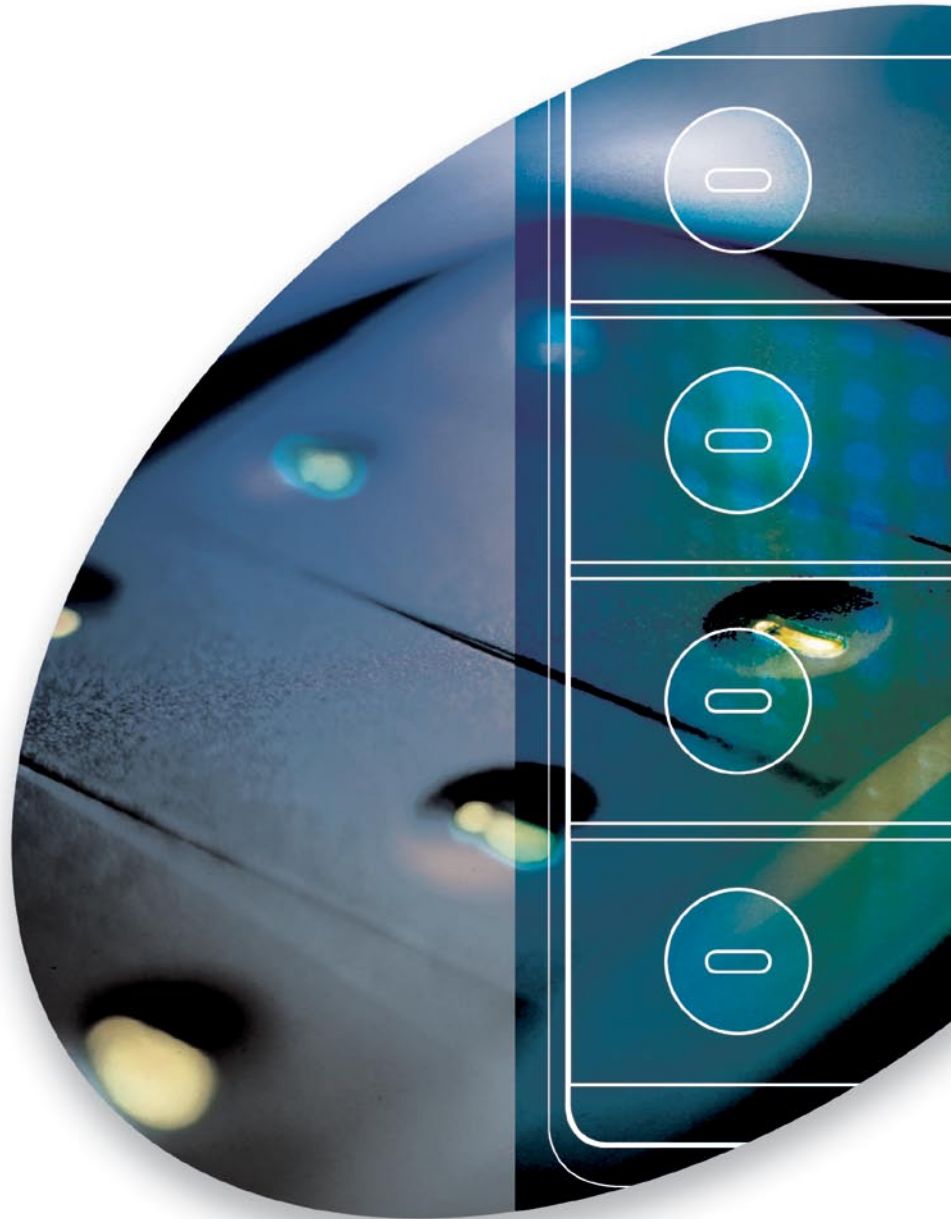


# *Products Guide*

Square D® Lighting Control  
and Integrated Home Systems



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# Occupancy Sensors



# Introduction to Occupancy Sensors

Square D® occupancy sensors help building owners achieve energy savings and energy code compliance with sensors that are easy to select, install and commission. Employing passive infrared (PIR), ultrasonic and dual technology to accurately detect occupancy and control lighting loads, Square D occupancy sensors automatically shutoff lighting in unoccupied areas – eliminating waste, reducing energy costs, and meeting code requirements.

*Square D innovations help building owners not only comply with energy codes, but they also maximize energy savings.*

- Integral light level sensors maximize energy savings in day-lit areas by holding off artificial lighting when adequate natural light is available.
- Walk-through mode detects brief periods of occupancy in private offices, allowing the sensor to shutoff lighting with less time delay.
- Lamp Saver mode alternates the A and B loads in rooms using 50/50 bi-level lighting control to maximize lamp life and reduce maintenance.
- Isolated relays may be used to communicate with other control systems, such as building automation and energy management systems that control other building systems, like HVAC and lighting, to further maximize energy savings.

Square D makes lighting control easy with a full line of versatile occupancy sensors that are easy to select, install and commission. For most applications, the sensors may be installed right out of the box with no adjustment. When adjustment is needed, adjustments are simple to understand and easy to access, making commissioning a breeze.

Square D occupancy sensors were designed to interface with other systems, including Powerlink® and Clipsal® Lighting Control Systems, using normally-open and normally-closed contacts. As lighting control needs change and more sophisticated lighting control is desired, Square D occupancy sensors interface with other systems to maximize energy savings and enhance occupant satisfaction.

# Square D® Wall Switch Occupancy Sensor

Square D® Wall Switch Occupancy Sensors employ the latest passive infrared (PIR) technology to automatically control lighting in offices, private restrooms and employee break rooms.

Each Sensor employs a special 180° multi-segmented lens and PIR motion detector circuit to detect motion. This unit will automatically switch the lights off after a preset delay if no motion is detected.

The Square D Wall Switch Occupancy Sensor fits in place of existing wall switches, connecting to existing active line and ground wiring similar to a typical wall switch. No neutral or minimum load is required.

To assure long relay life, Square D has developed a low energy switch circuit to assure maximum contact life. These sensors are compatible with electronic and magnetic ballast loads, and require no minimum load.



Wall Switch Replacement Occupancy Sensor

## TECHNICAL INFORMATION

Input	<b>120 or 277Vac 60 Hz</b>	
Output	<b>120Vac</b> <b>1000 W max. incandescent load</b> <b>1000 VA max. ballast load</b> <b>¼ hp max. motor load</b>	<b>277Vac</b> <b>1800 VA max. ballast load</b>
Operating Temperature	<b>32 - 122° F (0 - 50°C)</b>	
Humidity	<b>90% max. relative humidity non-condensing</b>	
Standards	<b>UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified</b>	

\*For Diagram see technical section page 10

## PRODUCT FEATURES

- Available in white and ivory with matching decorator wall plate cover
- Auto On / Auto Off
- Manual bypass
- 120 or 277Vac input (no neutral required)
- No power pack required
- No minimum load
- 180° field of view (Up to 1000 sq. ft.)
- User adjustable time delay from 15 sec - 30 minutes
- Red LED motion indicator blinks to indicate motion detection
- Suitable for use on all electronic and magnetic ballasts
- Furnished with (3) x 6 inch external wires (pig tails)
- UL and cUL Listed
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSPWS1277AI	Wall Switch Occupancy Sensor (ivory)
SLSPWS1277AW	Wall Switch Occupancy Sensor (white)

# Square D® Wall Switch Occupancy Sensor With Manual On

Square D® Wall Switch Occupancy Sensor with Manual-On employs the latest passive infrared (PIR) technology to automatically control lighting in offices, employee break rooms and utility rooms.

For maximum energy savings, the Square D Wall Switch Occupancy Sensor with Manual-On requires the user to switch on lighting manually by pressing the button on the front. Employing a special 180° multi-segmented lens and PIR motion sensor, the sensor reliably detects occupancy to keep lights on while the room is occupied. This unit will automatically switch the lights off after a pre-set delay if no motion is detected.

The Square D Wall Switch Occupancy Sensor is easy to install. Connecting to existing active line and ground wiring similar to a typical wall switch, the Wall Switch Occupancy Sensor is the simplest way to achieve energy-saving lighting control with minimal installation time.

To assure long relay life, Square D has developed a low energy switch circuit to assure maximum contact life. These sensors are compatible with electronic and magnetic ballast loads, and require no minimum load.



Wall Switch Replacement Occupancy Sensor with Manual On

## TECHNICAL INFORMATION

Input	120 or 277Vac 60 Hz	
Output	<b>120Vac</b> <b>1000 W max. incandescent load</b> <b>1000 VA max. ballast load</b> <b>¼ hp max. motor load</b>	<b>277Vac</b> <b>1800 VA max. ballast load</b>
Operating Temperature	32 - 122° F (0 - 50°C)	
Humidity	90% max. relative humidity non-condensing	
Standards	UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified	

\*For Diagram see technical section page 10

## PRODUCT FEATURES

- Available in white and ivory with matching decorator wall plate cover
- Manual On / Auto Off
- Manual bypass
- 120 or 277Vac input (no neutral required)
- No power pack required
- No minimum load
- 180° field of view (Up to 1000 sq. ft.)
- User adjustable time delay from 15 sec. - 30 minutes
- Red LED motion indicator blinks to indicate motion detection
- Suitable for use on all electronic and magnetic ballasts
- Furnished with (3) 6 inch external wires (pig tails)
- UL and cUL Listed
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSPWS1277MW	Wall Switch Occupancy Sensor With Manual On (white)
SLSPWS1277MI	Wall Switch Occupancy Sensor With Manual On (ivory)

# Square D® Commercial Grade PIR Single Circuit Wall Switch Occupancy Sensor

The Square D® Single Circuit PIR Wall Switch Occupancy Sensor with Light Level features passive infrared (PIR) technology to conveniently control lighting in offices, private bathrooms, utility rooms and employee break rooms. Low profile sensor available in white, ivory, gray, light almond and black with color-matched segmented lens to meet any décor need.

**Light Level Sensor Mode:** Each sensor includes an adjustable light level sensor to hold off artificial lighting when adequate natural light is present. When natural light levels drop below the threshold, the sensor will turn on artificial lighting in occupied spaces.

**Walk-Through Mode:** To maximize energy savings and reduce waste, the sensor detects when areas are briefly occupied as a result of an occupant walking through and turns off lighting based on a shorter time delay.

The sensor does not require a neutral connection or minimum load, making it great for retrofits. Easily replaces an existing wall switch using existing wiring – no wiring modifications required. Matching wall switch cover plate makes retrofits clean and simple.



Single Circuit Wall Switch Occupancy Sensor

## TECHNICAL INFORMATION

Input	120-277Vac +/-10% 50/60 Hz	
Output	<b>120Vac</b> <b>1000 W max. tungsten incandescent load</b> <b>¼ hp max. motor load 277Vac</b> <b>1000 VA max. ballast load</b>	<b>277Vac</b>  <b>1800 VA max. ballast load</b>
Operating Temperature	32 - 122° F (0 - 50°C)	
Humidity	0 - 90% RH Non-condensing	
Time Delay Adjustment		
Normal	0.5 - 30 minutes	
Walk Through Mode	2 minutes if no activity is detected after 30 seconds	
Test Mode	15 seconds	
Light Level adjustment	0.5 - 250 FC	
Detection	180° passive infrared (PIR)	
Audible Alert	Selectable	
Service Switch	OFF / Auto / ON	
Manual Operation	Pushbutton ON/OFF	
Lens	Impact Resistant	
Relay Switching	0° +/- 500uS	
Standards	UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified	

\*For Diagram see technical section page 10

## PRODUCT FEATURES

- Available in white, ivory, gray, light almond and black with matching wall switch cover plate
- Color matching multi-segmented lens
- Selectable auto-on and manual-on modes
- 120-277Vac 50/60Hz input
- 180° field of view
- 1000 sq. ft. major motion and 300 sq. ft. minor motion coverage area
- Light level sensor
- Walk-through mode
- Adjustable light level, time delay and sensitivity
- Red LED motion indicator
- For use with electronic and magnetic ballasts
- No neutral connection, minimum load or power pack required
- UL and cUL Listed for United States and Canada
- Test mode (15 second time delay)
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSPWS1277UW	White
SLSPWS1277UI	Ivory
SLSPWS1277UG	Gray
SLSPWS1277UL	Light Almond
SLSPWS1277UB	Black



# Square D® Commercial Grade PIR Dual Circuit Wall Switch Occupancy Sensor

Square D® Dual Circuit Wall Switch Occupancy Sensors independently control two lighting circuits with bi-level switching to reduce lighting by 50% which may be required by energy codes. The dual circuit wall switch occupancy sensor employs passive infrared (PIR) technology and a 180 degree segmented lens to achieve minor motion coverage up to 300 square feet (27.87 sq. meters) to reliably control lighting in offices, conference rooms and employee break rooms.

**Light Level Sensor Mode:** Each sensor includes an adjustable light level sensor to hold off artificial lighting when adequate natural light is present. When natural light levels drop below the threshold, the sensor will turn on artificial lighting in occupied spaces.

**Walk-Through Mode:** To maximize energy savings, the sensor detects when areas are briefly occupied as a result of a person walking through and turns off lighting based on a shorter time delay.

**Lamp Saver Mode:** When the lamp saver feature is enabled, the sensor automatically alternates which circuit responds to motion. The result is more predictable lamp life and reduced maintenance.

The sensor easily replaces two wall switches using existing wiring with no wiring modifications required. Optional 2-gang wall switch cover plates available in matching colors.



Dual Circuit Wall Switch Occupancy Sensor

## TECHNICAL INFORMATION

Input	120-277Vac 50/60 Hz	
Output	<b>120Vac</b> <b>1000 W max. incandescent load</b> <b>1000 VA max. ballast load</b> <b>¼ hp max. motor load</b>	<b>277Vac</b> <b>1800 VA max. ballast load</b>
Operating Temperature	32 - 122° F (0 - 50°C)	
Humidity	90% max. RH Non-condensing	
Standards	UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified	

\*For Diagram see technical section page 10

## PRODUCT FEATURES

- Available in white, ivory, gray, light almond and black with matching wall switch cover plate
- Color matching multi-segmented lens
- Selectable auto-on and manual-on modes
- 120-277Vac 50/60Hz input
- 180° field of view
- 1000 sq. ft. major motion and 300 sq. ft. minor motion coverage area
- Light level sensor
- Walk-through mode
- Adjustable light level, time delay and sensitivity
- Red LED motion indicator
- For use with electronic and magnetic ballasts
- No neutral connection, minimum load or power pack required
- UL and cUL Listed for United States and Canada
- Test mode (15 second time delay)
- Five-year warranty

CATALOG NUMBER	DESCRIPTION	BLANK CATALOG NUMBER	TOGGLE CATALOG NUMBER	DESCRIPTION
SLSPWD1277UW	White	SLSPWP2DBW	SLSPWP2DTW	White
SLSPWD1277UI	Ivory	SLSPWP2DBI	SLSPWP2DTI	Ivory
SLSPWD1277UG	Gray	SLSPWP2DBG	SLSPWP2DTG	Gray
SLSPWD1277UL	Light Almond	SLSPWP2DBL	SLSPWP2DTL	Light Almond
SLSPWD1277UB	Black	SLSPWP2DBB	SLSPWP2DTB	Black

# Square D® Ceiling Mounted PIR Occupancy Sensor

Square D® Ceiling Mounted Passive Infrared (PIR) Occupancy Sensor accurately detects occupancy and automatically switches lighting on and off as needed. This low profile sensor is ceiling mounted for superior motion detection.

With a 360 degree field of view and up to 1000 square feet (92.90 sq. meters) of coverage area, the Square D Ceiling Mounted PIR Occupancy Sensor is ideal for offices, break rooms and copier rooms.

Ceiling mount sensors also incorporate an integral light level sensor to prevent lighting from switching On when sufficient ambient light is present, such as is commonly found in windowed areas.

Installation and configuration is simple. The sensor readily mounts to drop ceilings and features front located adjustments for setting sensitivity and time delay. Features an isolated relay for use with building automation, security and HVAC systems.



Ceiling Mounted PIR Occupancy Sensor

## TECHNICAL INFORMATION

Current Consumption @ 24Vdc	<b>21mA Nominal</b>
Supply Voltage	<b>24Vdc or 24Vac</b>
Isolated Relay	<b>1A @ 24Vdc Resistive</b>
Operating Temperature	<b>32 - 122° F (0 - 50°C)</b>
Max. Humidity	<b>90% RH Non-condensing</b>
Standards	<b>UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified</b>

\*For Diagram see technical section page 11

## PRODUCT FEATURES

- 1000 sq. ft. (92.90 sq. meters) coverage area
- 24Vac for use with BAS systems
- 360 degree field of view
- Light Level Sensing (from 0.5 to 250 foot-candles)
- Adjustable Time Delay (pre-set time delays from 15 seconds (test) to 30 minutes)
- Adjustable Sensitivity (from 60 to 100%)
- Isolated Relay (1A at 24Vdc NO and NC Form C Relay)
- Red LED Motion Indicator
- Adjustment compartment cover equipped with retention clip
- UL/cUL Listed
- Manual Bypass
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSCPS1000	Ceiling Mounted PIR Occupancy Sensor
SLSP1277	Power Pack (required)
SLSSP24	Auxiliary Relay

# Square D® Ceiling Mounted Ultrasonic Occupancy Sensor

The Square D® Ceiling Mounted Ultrasonic Occupancy Sensor accurately detects occupancy and automatically switches lighting On and Off as needed. This low profile sensor is ceiling mounted for superior motion detection over partitions and other common obstructions.

With a 360 degree field of view and up to 2000 square feet (185.8 sq. meters) of coverage area, the Square D Ceiling Mounted Ultrasonic Occupancy Sensor is ideal for storage rooms, multi-stalled bathrooms and open office areas.

Ceiling mount sensors also incorporate an integral light level sensor to prevent lighting from switching On when sufficient ambient light is present, such as is commonly found in windowed areas.

Installation and configuration is simple. The sensor readily mounts to drop ceilings and features front located adjustments for setting sensitivity and time delay. Features an isolated relay for use with building automation, security and HVAC systems.



Ceiling Mounted Ultrasonic Occupancy Sensor

## TECHNICAL INFORMATION

Current Consumption @ 24Vdc <sup>1</sup>	<b>34mA Nominal (125mA maximum)</b>
Supply Voltage	<b>24Vdc or 24Vac</b>
Isolated Relay	<b>1A @ 24Vdc Resistive</b>
Operating Temperature	<b>32 - 122° F (0 - 50°C)</b>
Max. Humidity	<b>90% RH Non-condensing</b>
Standards	<b>UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified</b>

<sup>1</sup>For Diagram see technical section page 11

## PRODUCT FEATURES

- 2000 sq. ft. (185.8 sq. meters) coverage area
- 360 degree field of view
- 24Vac input for use with building automation systems
- Light Level Sensing (from 0.5 to 250 foot-candles)
- Adjustable Time Delay (pre-set time delays from 15 seconds (test) to 30 minutes)
- Adjustable Sensitivity (from 60 to 100%)
- Isolated Relay (1A at 24Vdc NO and NC Form C Relay)
- Red LED Motion Indicator
- Adjustment compartment cover equipped with retention clip
- UL/cUL Listed
- Manual Bypass
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSCUS2000	Ceiling Mounted Ultrasonic Occupancy Sensor
SLSP1277	Power Pack (required)
SLSP24	Auxiliary Relay

# Square D® Ceiling Mounted Dual Technology Occupancy Sensor

The Square D® Ceiling Mounted Dual Technology Occupancy Sensor employs both passive infrared (PIR) and ultrasonic technology to accurately detect occupancy and automatically turn on lighting.

To reduce the occurrence of false-on events, this sensor employs PIR technology to detect major motion. Once lighting has been turned on, it employs highly sensitive PIR and ultrasonic technology to detect minor motion and keep lighting on while the area remains occupied. When the room or area is no longer occupied, the sensor turns off lighting after a pre-set time delay.

The low profile sensor is ceiling mounted for greatest sensitivity to detect motion in large areas with obstructions. With a 360 degree field of view and up to 2000 square feet (185.8 sq. meters) of coverage area, the Ceiling Mounted Dual Technology Occupancy Sensor is ideal for conference rooms, classrooms and large meeting rooms.

These ceiling mount sensors also incorporate an integral light level sensor to prevent lighting from switching On when sufficient ambient light is present, such as is commonly found in windowed areas.

Installation and configuration is simple. The sensor readily mounts to drop ceilings and features front-located adjustments for setting sensitivity and time delay. The sensor also features an isolated relay for use with building automation and HVAC systems.



Ceiling Mounted Dual Technology Occupancy Sensor

## TECHNICAL INFORMATION

Current Consumption	<b>37mA Nominal</b>
Supply Voltage	<b>24Vdc or 24Vac</b>
Isolated Relay	<b>1A @ 24Vdc Resistive</b>
Operating Temperature	<b>32 - 122° F (0 - 50°C)</b>
Max. Humidity	<b>90% RH Non-condensing</b>
Standards	<b>UL and cUL Listed FCC Part 15, Home and Office Use (Class B) Title 24 Certified</b>

\*For Diagram see technical section page 11

## PRODUCT FEATURES

- 2000 sq. ft. (185.8 sq. meters) coverage area
- 24Vac for use with BAS systems
- 360 degree field of view
- Light Level Sensing (from 0.5 to 250 foot-candles)
- Adjustable Time Delay (pre-set time delays from 15 seconds (test) to 30 minutes)
- Adjustable Sensitivity (from 60 to 100%)
- Isolated Relay (1A at 24Vdc NO and NC Form C Relay)
- Adjustment compartment cover equipped with retention clip
- LED Motion Indicators (Red-PIR/Green-Ultrasonic)
- UL/cUL Listed
- Manual Bypass
- Five-year warranty

CATALOG NUMBER	DESCRIPTION
SLSCDS2000	Ceiling Mounted Dual Technology Occupancy Sensor
SLSP1277	Power Pack (required)
SLSP24	Auxiliary Relay

# Square D® Power Pack and Auxiliary Relay

The Square D® Power Pack supplies low voltage power to Square D ceiling and wall mounted occupancy sensors, and employs a heavy duty 20A relay to switch lighting and HVAC loads based on a control signal received from the occupancy sensor. The power pack accepts both 120V and 277V input and supplies up to 100 mA at 24Vdc

The power pack employs a micro-controller that switches loads at minimum voltage, protecting relay contacts from high in-rush current common when switching electronic ballasts. This switching method reduces the stress across the relay contacts, preventing arc-over and assuring long reliable contact life.

Similar to the power pack, the auxiliary relay does not supply power, but switches lighting and HVAC loads based on a control signal from the occupancy sensor.

Both the power pack and auxiliary relay are housed in a rugged plenum rated enclosure. Flexible mounting scheme allows for installation inside or outside a standard 4 x 4 inch junction box.



Power Pack

## TECHNICAL INFORMATION

Item	Power Pack		Auxiliary Relay	
	Storage Temp	-20°F to 150°F (-29C to 65C)		-20°F to 150°F (-29C to 65C)
Operating Temperature	32°F to 104°F (0C to 40C)		32°F to 104°F (0C to 40C)	
Max. Humidity	90% RH Non-condensing		90% RH Non-condensing	
Input	120 or 277Vac / 60Hz		24Vdc / 36 mA	
Output	24Vdc/100 mA Nominal		No Power Supply	
Max Load Ratings	120Vac/60Hz	277Vac/60Hz	120Vac/60Hz	277Vac/60Hz
Tungsten	15A/1800W	15A/1800W	15A/1800W	15A/1800W
Ballast	20A	20A	20A	20A
AC Motor	1HP at 120Vac/ No HP rating at 277Vac			
Dimensions	3 in. (76mm) tall x 2.25 in. (57mm) wide x 1.75 in. (44mm) deep			

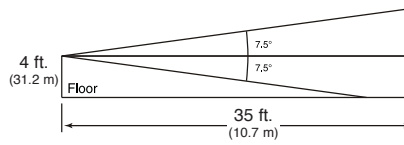
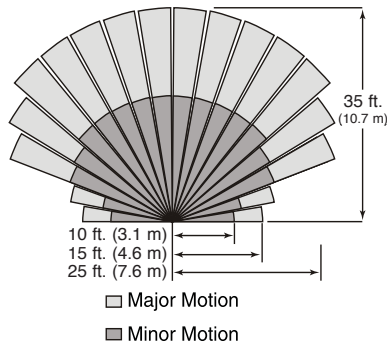
\*For Diagram see technical section page 11

## PRODUCT FEATURES

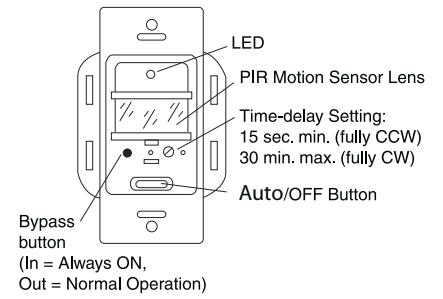
- 120V & 277V Input
- Plenum Rated
- Flexible Mounting Options
- UL and cUL Listed
- FCC Part 15, Class B
- Heavy duty relay rated to switch electronic ballast loads
- External color coded leads for quick installation
- Mounts to a standard 4 in. (101 mm) x 4 in. (101 mm) junction box using a ½ in. (12.7 mm) threaded EMT nipple

CATALOG NUMBER	DESCRIPTION
SLSP1277	Ceiling Mounted Occupancy Sensor Power Pack
SLSP24	Ceiling Mounted Occupancy Sensor Auxiliary Relay

## Square D® Wall Switch Occupancy Sensor

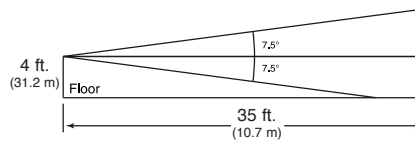
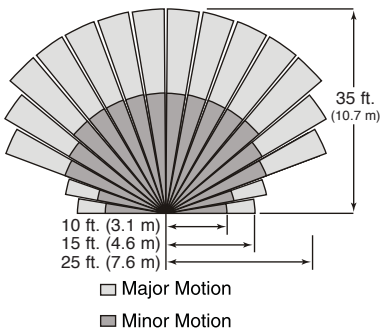


Sensor field of view

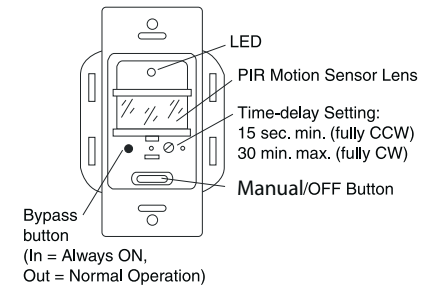


Sensor features

## Square D® Wall Switch Occupancy Sensor With Manual On

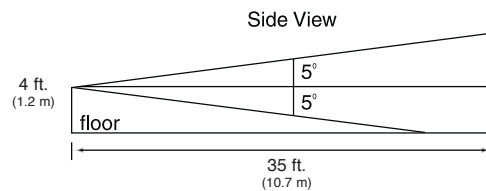
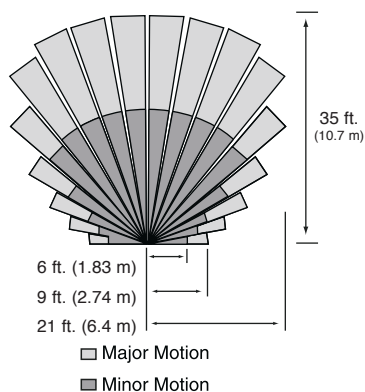


Side view of sensor field of view



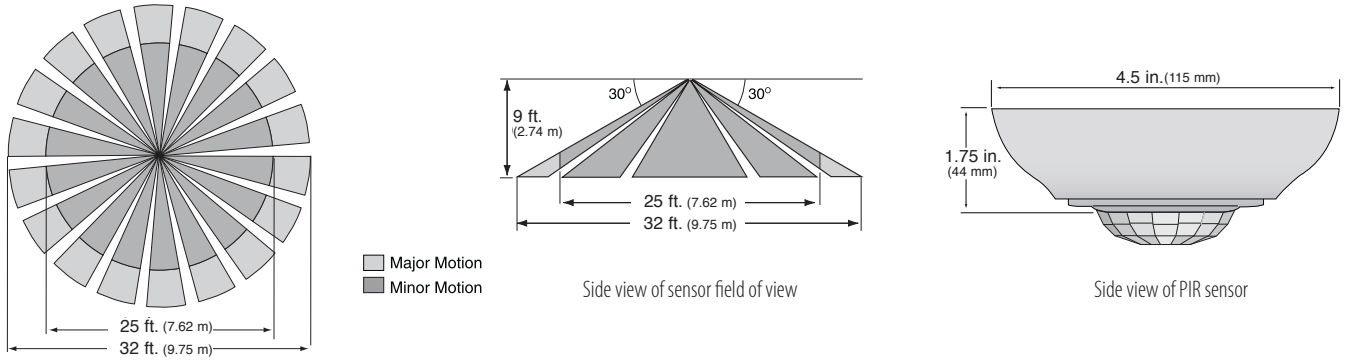
Sensor features

## Square D® Commercial Grade Single and Dual Circuit PIR Wall Switch Occupancy Sensors

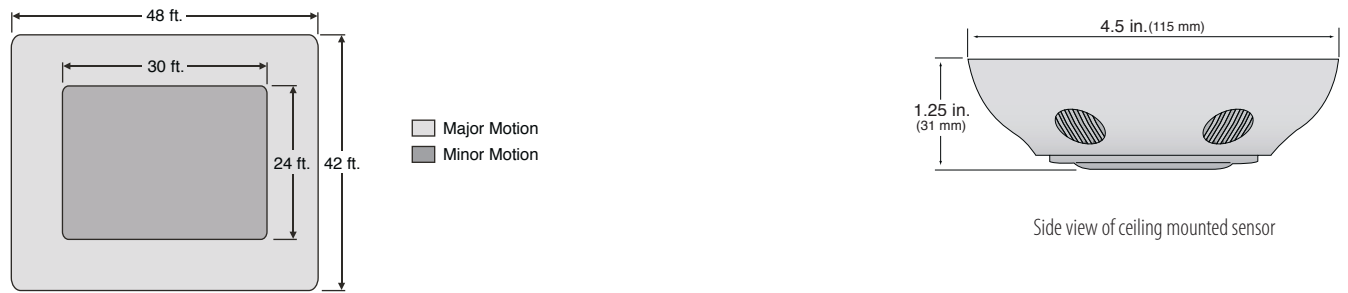


Side view of sensor field of view

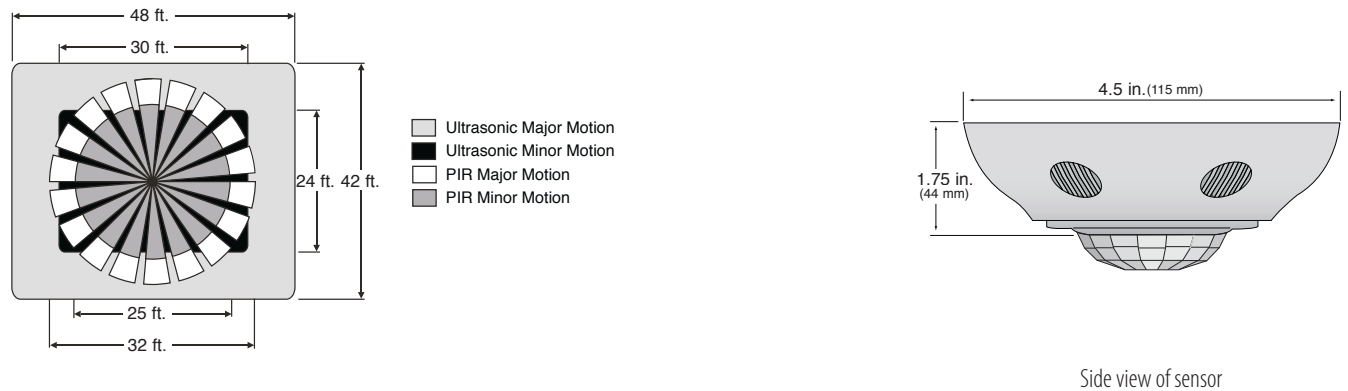
### Square D® Ceiling Mounted PIR Occupancy Sensor



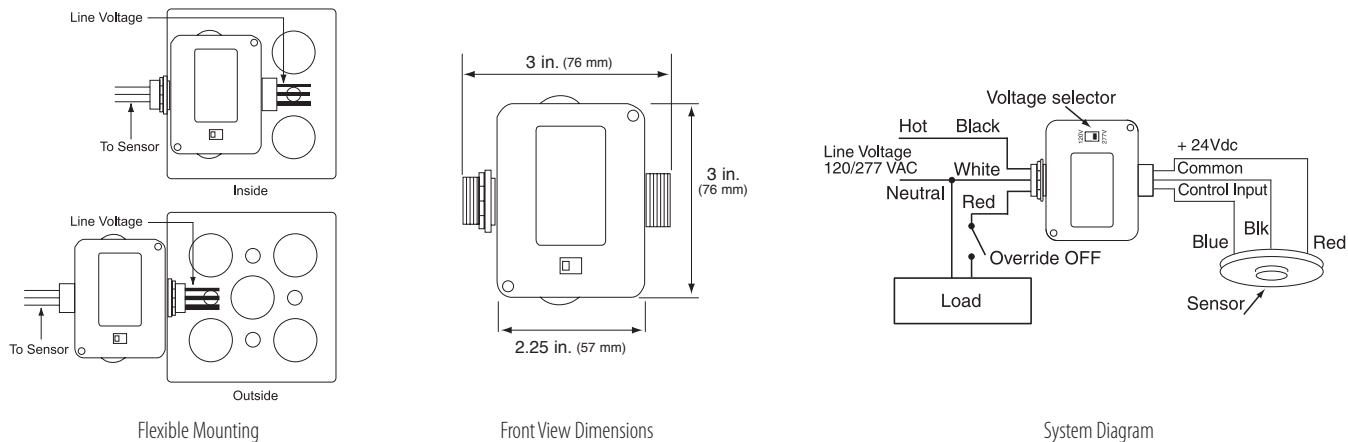
### Square D® Ceiling Mounted Ultrasonic Occupancy Sensor



### Square D® Ceiling Mounted Dual Technology Occupancy Sensor



### Square D® Power Pack and Auxiliary Relay



# Track-Limiting Panels





## Introduction to Track-Limiting Panels

Energy codes typically require lighting power density calculations for track lighting to be based on the linear feet of installed track. Some codes stipulate multipliers as low as 30W/foot while others use a multiplier as high as 70W/foot. When energy efficient lighting is used, the connected load is typically much less than the per-foot multipliers given in the energy codes. This penalizes lighting designs that employ track lighting and wastes available lighting watts that could be applied more effectively.

Many codes also provide provisions to compute the luminaire wattage based off the maximum wattage that the circuit can provide. For example, CA Title 24, 130(c)3 states: "Luminaire wattage incorporated into the installed lighting power shall be determined in accordance with the following criteria . . . The wattage of line-voltage lighting track and plug-in busway which allows the addition or relocation of luminaires without altering the wiring of the system shall be the volt-ampere rating of the branch circuits feeding the luminaires . . ."

# Square D® Track-Limiting Panels



Square D® Track-Limiting Panels eases the burden of meeting today's stringent energy codes like California Title 24. Typically used for track lighting applications, these panels limit the power available to a lighting branch circuit by incorporating a special circuit breaker into the branch circuit.

Because the Track-Limiting panel limits the available power to a specified level, designers can better reflect the actual power requirements into their load density calculations. Power level will be substantially lower than by using the standard multipliers given for track lighting.

Panels are readily accessible providing easy access for inspection and maintenance. These panels also incorporate circuit breakers rated for the higher available fault currents found on many 120V systems. In addition, the use of supplementary protectors provides a convenient means for isolating individual track circuits.



Track-Limiting Panel

## TECHNICAL INFORMATION

Item	Track-Limiting Panel
Type	<b>NEMA 1 Indoor</b>
Box	<b>Galvanized steel</b>
Finish	<b>ANSI 49 Gray</b>
Voltage Rating	<b>120Vac</b>
Short Circuit Current Rating	<b>10,000A</b>
Branch Circuit Ampere Ratings	<b>0.5A, 1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 10A, 15A, 16A</b>
Branch Circuit Terminals	<b>Box lugs: #18-4 AWG (1-25mm<sup>2</sup>)</b>
Operating Environment	<b>77°F (25°C)</b>
Standards	<b>UL1077, UL508A</b>
Listings/Certifications/Compliance	<b>California Title 24, ASHRAE 90.1 compliant</b>

## PRODUCT FEATURES

- Readily accessible panel mounted enclosures
- Flush or surface mounting
- Hinged door with key-locking latch
- Up to 42 circuit breakers per enclosure
- Circuit breakers rated 0.5A – 16A
- Factory assembled, tested, and labeled
- CA Title 24 compliant

Enclosures are available for mounting up to 21 or 42 circuits. Both enclosures are available for flush or surface mounting.

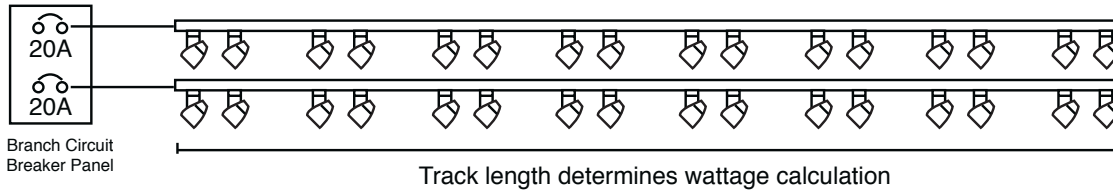
Enclosure	Enclosure Cabinet Dimensions
21M Mounted	<b>14.25 x 3.75 x 17.92 in. (362 x 95 x 455mm)</b>
42M Mounted	<b>14.25 x 3.75 x 33.78 in. (362 x 95 x 858mm)</b>

Energy codes typically calculate track lighting loads based on linear feet of installed track. Some codes use a multiplier as low as 30 watts/foot while others use a multiplier as high as 70 watts/foot. When using the energy efficient lighting technologies available today, the connected load is typically much less than the per-foot multipliers used by most energy codes. This penalizes lighting designs that employ track lighting and wastes available lighting watts that could be used more effectively.

Below is a typical track lighting example. The Standard Layout consists of two 50' runs of single circuit track, each with sixteen 39W track heads for a total connected load of 1376W. The Revised Layout Using Short Track Segments has the same 1376W connected load but uses sixteen short 4' track segments (64'), each fed separately, to help minimize the impact of the watts per foot multiplier. The scenario with the Track-Limiting Panel uses the original two 50' runs of single circuit track, with each monitored by a 6 Amp current limiting circuit breaker that is closely matched to the actual connected load of 1376W. This results in the minimum calculated watts per the energy codes.

**WITHOUT THE TRACK-LIMITING PANEL**

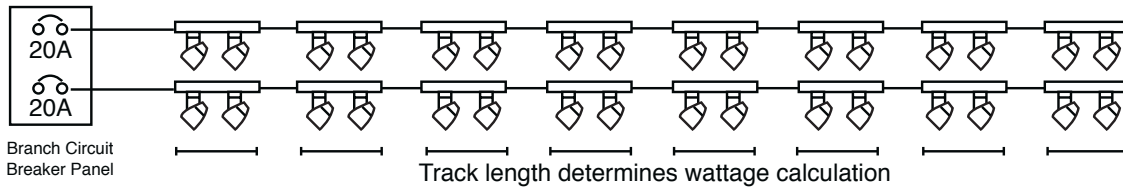
Standard Layout



100 ft of track = **4500W\***

\*Based on 45W/ft multiplier of California Title 24

Revised Layout Using Short Track Segments

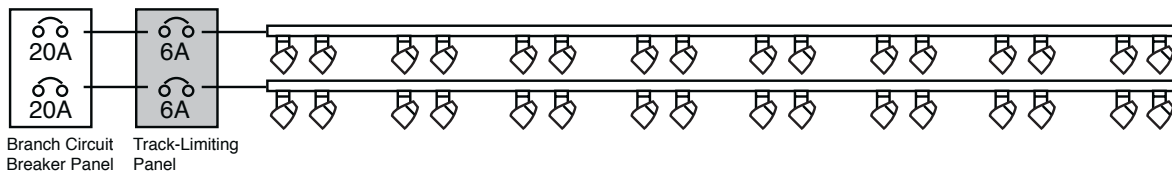


64 ft of track = **2880W\*** (plus significantly higher installed costs and reduced layout flexibility)

**WITH THE TRACK-LIMITING PANEL**

The Square D Track-Limiting Panel installs between the branch circuit breaker and the track lighting, solving the energy code calculation discrepancy, making the wattage calculation independent of track length.

With the Track-Limiting Panel



Same 100 ft. of track: 6A @ 120V = 720W  
6A @ 120V = 720W  
**1440W total**

# Powerlink Lighting Control

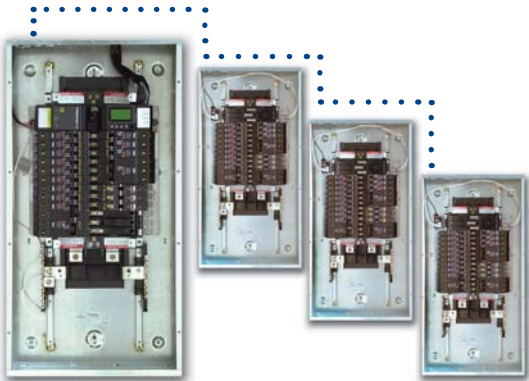


# Introduction to Powerlink<sup>®</sup> Lighting Control

For many designers, the engineering of a suitable lighting control system has become a daunting task. The designer must balance space constraints, equipment and installation costs, maintenance, and operational concerns, while ensuring a code-compliant installation. Fortunately, the Square D<sup>®</sup> Powerlink<sup>®</sup> G3 Lighting Control System addresses concerns by:

- Using standard lighting panelboards: All Square D Powerlink G3 components mount in the panel just like a standard circuit breaker. Documenting your control system layout is as simple as indicating which branch circuits are to be controlled.
- Saving space: Since the lighting control system is located inside the lighting panelboard, valuable wall and floor space is available for more productive uses. Square D also offers space-saving, column-width panelboards and flexible modular panelboard systems.
- Complying with codes: With today's high available fault currents, it's extremely important that your system meets code requirements. The Square D Powerlink G3 system is fully UL Listed and meets NEC 110.10 requirements.

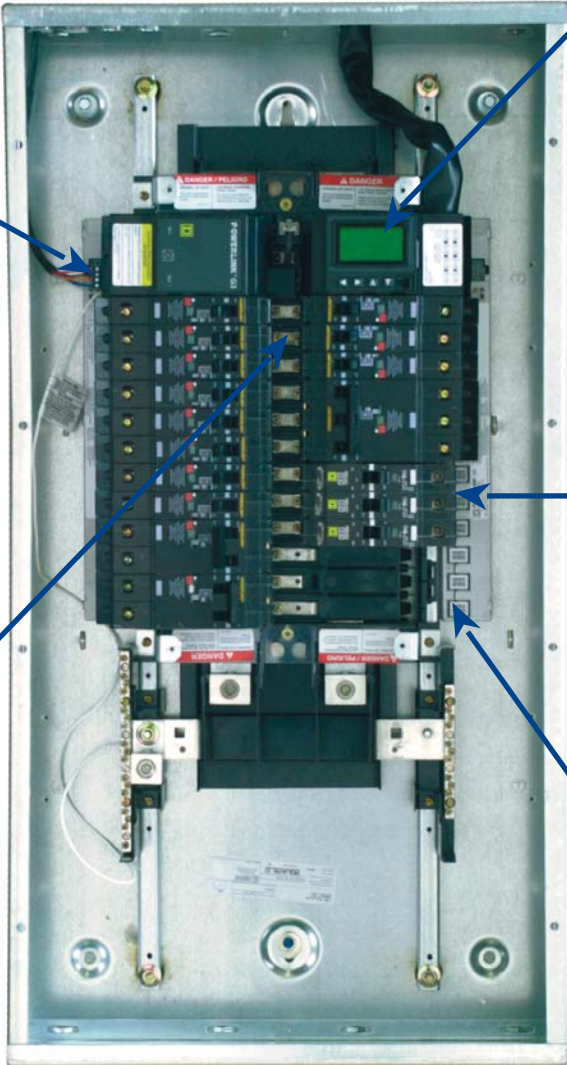
# Powerlink® G3 Panel Mounted Components



Up to eight panels can be operated from a single controller.

A self-contained power supply furnishes the power for remotely operated circuit breaker switching and for the system's electronics.

The intelligence of the Powerlink G3 system comes from its microprocessor-based controller. It processes many signals that originate externally from control devices, such as switches or sensors, or from its powerful internal time scheduler that switches breakers according to predefined daily schedules.



Innovative Square D® remote-operated circuit breakers combine the protective features of conventional circuit breakers with the switching functions of a contactor.

Conventional ECB circuit breakers can be readily incorporated into a G3 panel.

Plug-on control bus strips act as the bridge between the circuit breakers and the electronic control components of a Powerlink G3 system.

# NF Panelboards, Column Width & Custom Panel Boards

The NF Panelboard offers superior performance and application flexibility for commercial and industrial electrical systems up to 480Y/277V. Square D is the only lighting control supplier that offers a full range of enclosure options including NEMA Type 3R, 5 and 12. The following designs are available to suit your needs:

- **Standard** – The NF Panelboard offers superior performance and application flexibility for commercial and industrial electrical systems up to 480Y/277V. This versatile lighting and power distribution panelboard features a wide selection of circuit breakers, accessories, and ready-to-install kits, as well as 200% rated neutrals for non-linear loads.
- **Column-width** – These innovative panels are designed to fit into a standard size W, H, or I-beam support columns commonly found in distribution and industrial facilities. Column-width panelboards can also be wall mounted, saving valuable floor and wall space where tight equipment space is a concern.
- **Modular Panelboard Systems (MPS)** – This panel system bundles electrical distribution equipment into a single, factory assembled and wired integrated system. This approach replaces the traditional method of independently mounting each panelboard and lighting control system, which saves space and reduces installation time. Modular panelboard systems are tailored to specifications and are available with a mix of Square D NQOD, NF, NF Column-width and Square D Powerlink interiors, as well as optional power and control wiring, dry type transformers, lighting contactors, transient voltage surge suppression (TVSS) units, and enclosure space for field installed equipment. All MPS panelboards are Underwriters Laboratories (UL) Listed under File E33139 (Panelboard UL67).
- **Integrated Power Center (IPC)** – This integrated system offers the wide range of factory assembled and wired panelboards interiors, dry type transformers, and lighting control as offered with the MPS line. In addition, the IPC offers factory installed and programmed building management systems, automatic transfer switches, and motor starters. Regardless of your system complexity, Square D has the expertise to integrate your requirements into one optimized, cost effective, space saving solution. IPCs are Underwriters Laboratories (UL) Listed under file E83877 (Dead-Front Switchboard UL891).



NF Column Width Panelboard

# Square D® Powerlink® Remotely Operated ECB-G3 Circuit Breakers

Square D® Powerlink® G3 remotely operated circuit breakers are designed for installation in Square D NF Lighting Panelboards as part of the Square D Powerlink G3 Lighting Control System. These circuit breakers provide the same overcurrent protection as found in standard circuit breakers.

## THE BEST IN REMOTE OPERATION

- Robust 24Vdc motor and highly effective trip mechanism provide unequalled remote operation capability in terms of compact size, electrical ratings, and mechanical life.
- Motor and drive train can open and close the contacts when the circuit breaker handle is in the ON position.
- Contacts cannot be closed remotely when the handle is in the OFF position or the circuit breaker is tripped.
- Manual override selector located on the front of the breaker provides by-pass of automated control command
- In manual mode, the motor drive train is disconnected from the contact, allowing the circuit breaker handle to operate the contacts like a conventional circuit breaker.
- Remote contact status indication – determines the presence or absence of voltage on the load side terminal of the circuit breaker.

## TRIPPING SYSTEM WITH TRUE RMS SENSING

- Square D Powerlink ECB-G3 circuit breakers have a permanent trip unit that contains a factory preset thermal (overload) trip element and a magnetic (short circuit) trip element in each pole.
- The thermal trip element – true RMS sensing and is calibrated to carry the continuous current rating of the circuit breaker at 140°F (40°C) free air ambient temperature.
- In accordance with the National Electrical Code® (NEC) Square D Powerlink ECB – G3 circuit breakers are intended to be applied at up to 80 percent of their continuous current rating.



ECB-G3 Series Remotely Operated Circuit Breakers

## TECHNICAL INFORMATION

Voltage	120Vac	240Vac	480/277Vac
Interrupting Capacity	65 kAIR	65 kAIR	14 kAIR
Terminals	(1) #14 - 8 AL or (1) #14 - 8 CU		
Standards	UL Listed 489, NEMA Standard AB-1-1986, CSA Standard 22.5		

\*For series connector ratings, see page 31

## PRODUCT FEATURES

- 200,000 load endurance
- Remote and local status
- Manual override
- Extra large load terminal

All are listed as HACR type for use with air conditioning, heating and refrigeration equipment having motor group combinations and marked for use with HACR type circuit breakers. UL listed as HID rated for use with high intensity discharge lighting systems. \* UL listed as SWD rated

CATALOG NUMBER	One-Pole	CATALOG NUMBER	Two-Pole	CATALOG NUMBER	Three-Pole
ECB14015G3*	15 Amp	ECB24015G3*	15 Amp	ECB34015G3*	15 Amp
ECB14020G3*	20 Amp	ECB24020G3*	20 Amp	ECB34020G3*	20 Amp
ECB14030G3	30 Amp	ECB24030G3	30 Amp	ECB32030G3	30 Amp



# ECB-G3EL Remotely Operated Circuit Breakers for Emergency Lighting Circuits

Square D® Powerlink® ECB-G3EL circuit breakers provide a means to comply with the requirements of the NEC, 700.12(E). The circuit breaker contains both a remotely operated switched circuit for controlling the luminaires, and a manually operated unswitched circuit, which provides power to the unit emergency equipment’s charging and detection circuit. Both circuits are electrically tied to the same source via a single common bolt-on connection that receives its supply from the panelboard bus.

Both circuits of the ECB-G3EL breaker contain a thermal-magnetic trip mechanism that protects their associated conductors from overcurrent. The circuit breaker provides a common trip function ensuring that both circuits will open whenever a fault occurs on either of the circuits. It also provides a common handle tie to ensure that both circuits are manually switched together.



ECB-G3EL Remotely Operated Circuit Breakers for Emergency Lighting Circuits

## TECHNICAL INFORMATION

Voltage	<b>120Vac</b>	<b>240Vac</b>	<b>480/277Vac</b>
Interrupting capacity	<b>65 kAIR</b>	<b>65 kAIR</b>	<b>14 kAIR</b>
Terminals	<b>(1) #14 - 8 AL or (1) #14 - 8 CU</b>		
Standards	<b>UL Listed 489, NEMA Standard AB-1-1986, CSA Standard 22.5</b>		

## PRODUCT FEATURES

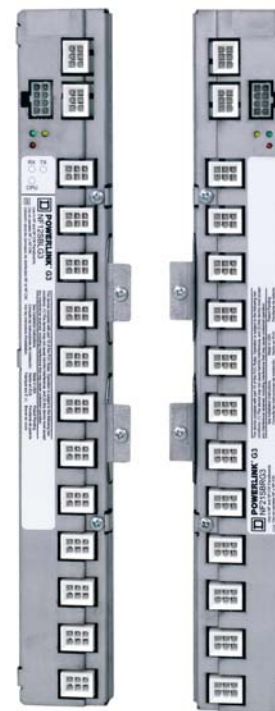
- 200,000 load endurance
- Remote and local status
- Manual override
- Extra large load terminal

<b>CATALOG NUMBER</b>	<b>AMPERE RATING</b>
<b>ECB142020G3EL</b>	20 Amp

# Square D® Powerlink® G3 Control Bus

Square D Powerlink G3 Control Buses provide the interface between the system controller and remotely operated circuit breakers. Specifically, they distribute 24Vdc switching power and control signals to switch remotely operated circuit breakers and report circuit breaker status back to the system controller.

One to four control bus strips can be mounted in a single panelboard. If only one control bus is required, it is always mounted on the left-hand side of a standard panelboard or at the top of a column-width panelboard.



G3 Control Bus

## TECHNICAL INFORMATION

Operating Temperature (external panelboard ambient)	<b>23°F to 104°F (-5°C to 40 °C)</b>
Storage Temperature	<b>-4°F to 185°F (-20°C to 85°C)</b>
Operating Humidity	<b>5% to 95% (non-condensing)</b>
ESD Immunity	<b>IEC 1000, Level 4</b>
RF Susceptibility	<b>IEC 1000, Level 3</b>
Electrical Fast Transient Susceptibility	<b>IEC 1000, Level 3</b>
Electrical Surge Susceptibility, power line	<b>IEC 1000, Level 4</b>
Electrical Surge Susceptibility, interconnection lines	<b>IEC 1000, Level 3</b>
Standards	<b>FCC Part 15, Class A; UL Listed 916 Energy Management Equipment</b>

## PRODUCT FEATURES

- Attaches to NF Panelboard interior mounting rail
- Modular connectors provide secure plug-in connections for remotely operated circuit breakers and control electronics.
- LEDs to indicate operational status.
- Dust caps provided to protect unused connections

CATALOG NUMBER	Max. Control circuits	Orientation
NF12SBLG3	12	Left
NF12SBRG3	12	Right
NF18SBLG3	18	Left
NF18SBRG3	18	Right
NF21SBLG3	21	Left
NF21SBRG3	21	Right

# Square D® Powerlink® Power Supply

The Square D Powerlink G3 Power Supply provides power to operate the controller, control buses and remotely operated circuit breakers. The power supply attaches to an NF Panelboard interior in the same manner as a standard 3-pole circuit breaker.

The power supply derives its power from the panelboard interior bus and converts the line voltage into two separate supplies: one supply furnishes the controller with a 24Vdc, Class 2 source; the other supply furnishes the control bus and subnet with a 24Vdc, Class 1 source.

An optional type of power supply, furnished with primary leads, is available for use with a separately derived primary power source. This option is often used in applications where the system must remain operational during power outages. In such applications, the external leads are connected to an uninterruptible power supply (UPS) or alternate power source.

In 20-inch (508 mm) wide panels, the power supply is always located in the upper left-hand corner of the interior. The controller is mounted adjacent to the power supply on the right-hand side.



Power Supply

## TECHNICAL INFORMATION

Operating Temperature (external panelboard ambient)	<b>23°F to 104°F (-5°C to 40 °C)</b>
Storage Temperature	<b>-4°F to 185°F (-20°C to 85°C)</b>
Operating Humidity	<b>5% to 95% (non-condensing)</b>
ESD Immunity	<b>IEC 1000, Level 4</b>
RF Susceptibility	<b>IEC 1000, Level 3</b>
Electrical Fast Transient Susceptibility	<b>IEC 1000, Level 3</b>
Electrical Surge Susceptibility, power line	<b>IEC 1000, Level 4</b>
Electrical Surge Susceptibility, interconnection lines	<b>IEC 1000, Level 3</b>
Standards	<b>FCC Part 15, Class A; UL Listed 916 Energy Management Equipment</b>

## PRODUCT FEATURES

- Attaches to panelboard interior, occupies three adjacent pole spaces.
- External lead for connection to panel neutral.
- Modular connectors provide secure plug-in connections for connection to left-hand side control bus and controller.
- LED indication of Class 1 and Class 2 voltage sources operational status.
- Removable communication terminal block for making subnet connections.
- Internally self-protected against short circuits and electrical surges.
- Low continuous power draw, less than 20VA.
- Optional external leads for connection to remote power source.

CATALOG NUMBER	VOLTAGE	PRIMARY SOURCE
NF120PSG3	120V	Panel Bus
NF240PSG3	240V	Panel Bus
NF277PSG3	277V	Panel Bus
NF120PSG3L	120V	External Leads
NF240PSG3L	240V	External Leads
NF277PSG3L	277V	External Leads

# Square D® Powerlink® Controllers

The Square D® Powerlink® G3 product line offers a simple, cost-effective means for controlling branch lighting circuits. Four distinct systems provide a variety of capabilities to meet virtually any need.

## 500 LEVEL SYSTEM

- Designed to be used in conjunction with other control devices such as: External time clocks, access readers, occupancy sensors, or other building systems.
- Control devices provide either dry-contact closures or digital serial communications.
- Incorporates internal programmable timers.
- Controller responds to commands from control devices by automatically switching a programmed group of lighting circuits.

## 1000 LEVEL SYSTEM

- Includes all the features of the 500 level system.
- Incorporates a flexible time scheduler that eliminates the need for external time clocks. Includes many control features not found in traditional, mechanical time clocks or energy management systems.
- Ideally suited for stand-alone systems in retail, office, institutional, and industrial facilities.

## 2000 LEVEL SYSTEM

- Combines the control, input, and scheduling features with the added benefit of embedded Ethernet connectivity.
- Peer-to-peer (P2P) control network connectivity allows different controllers to share input signals, schedules, and lighting zone states.
- Ethernet connectivity reduces network installation costs by eliminating the need for a dedicated lighting control network.

## 3000 LEVEL SYSTEM

- Combines control, input, and scheduling features of the 2000 level controller plus:
- Embedded web server for remote access without dedicated software
- Automated alarms notify users via email when pre-defined events occur (eg: trip breakers)

## 3000C LEVEL SYSTEM

- 3000C controller adds all the features of the 3000 level controller, plus the ability to integrate with Clipsal® C-Bus™ devices on the C-Bus network

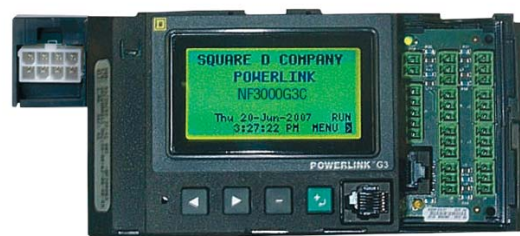


## BACNET CAPABILITY

The Building Automation and Control network (BACnet) communication protocol is being incorporated into the existing Powerlink® G3 controller design, and will be available in the first quarter 2008. The addition of the BACnet protocol will allow Powerlink panels to be easily integrated into a Building Automation System (BAS) employing this open communication standard without the need for communication bridges or gateways.

**CONTROLLER MODELS** - The following Powerlink G3 controller models will support 'native' BACnet communications:

- NF2000G3 - Ethernet communications, shared remote inputs, network time synchronization
- NF3000G3 - Email upon alarm, onboard web pages for status/control/configuration
- NF3000G3C - C-Bus communications (ability to interface with a Clipsal® lighting control network)



Controller

CATALOG NUMBER	CONTROLLER TYPE
NF500G3	500 Level Powerlink G3 Controller
NF1000G3	1000 Level Powerlink G3 Controller
NF1000G3N2	1000 Level Powerlink G3 Controller w/N2 Protocol
NF2000G3	2000 Level Powerlink G3 Controller
NF3000G3	3000 Level Powerlink G3 Controller
NF3000G3C	3000 Level Powerlink G3 Controller w/C-Bus Capabilities

# Controller Feature Comparison

Feature	System Level			
	500	1000	2000	3000
<b>Input Terminals ▲</b>				
2-wire	8	16	16	16
2-wire with status feedback ▼	8	8	8	8
3-wire	8	8	8	8
<b>Input Types</b>				
2-wire normally open (NO) or normally closed (NC)	X	X	X	X
2-wire NO or NC, with automatic blink notification	X ♦	X	X	X
2-wire maintained toggle	X ♦	X	X	X
2-wire momentary toggle	X ♦	X	X	X
2-wire momentary ON or momentary OFF	X ♦	X	X	X
3-wire momentary	X ♦	X	X	X
Input timers (1 sec. up to 18 hours)	X ♦	X	X	X
Input synchronization	-	X	X	X
Sentry® Switch support	X ♦	X	X	X
ON delay/OFF delay	X ♦	X	X	X
<b>Time Scheduler</b>				
Independent schedules	-	16	16	16
ON-OFF periods/schedule	-	24	24	24
7-day 24-hour repeating schedule	-	X	X	X
32 special event/holiday periods	-	X	X	X
Automatic daylight savings	-	X	X	X
Sunrise/sunset with offsets	-	X	X	X
Network time synchronization (requires TCP connection)	-	-	X	X
<b>Network Variables</b>				
Communications inputs (network accessible)	64	64	64	64
Remote sources (per controller)	-	-	32	32
Maximum subscriptions	-	-	256	256
<b>Zones</b>				
Maximum number	64	64	64	64
Maximum sources per zone	1	2	4	4
Configurable source logic (OR, AND, XOR, XNOR, NOR, NAND, LAST EVENT)	-	-	X	X
Maximum remotely operated circuit breakers (per subnet)	168	168	168	168
Blink notice (single, double, delay no blink)	X	X	X	X
ON-time	-	X	X	X
<b>Networking</b>				
RS-232 port/RS-485 port	X	X	X	X
Ethernet (10BaseT port)	-	-	X	X
<b>Protocols</b>				
BACnet	-	-	X	X
C-Bus	-	-	-	X †
Modbus® ASCII/RTU	X	X	X	X
Modbus TCP	-	-	X	X
Johnson Controls N2 ★	-	X	-	-
DMX512	-	X	X	X
<b>Front Panel</b>				
LED display with cover	X	-	-	-
Backlit LCD display	-	X	X	X
Password or front panel disable	X ♦	X	X	X
<b>Memory</b>				
Non-volatile memory for programs and configuration	X	X	X	X
On-board capacitor to power clock chip during power outage	-	X	X	X
Flash memory for firmware upgrade	x	x	x	x
<b>Viewing Options</b>				
Event Log	-	+	X	X
Strike Counter	-	X	X	X
Alarm viewing via Event Log	-	+	X	X
Alarm viewing via e-mail	-	-	-	X
Web-based setup, control and status monitoring	-	-	-	X

- ▲ Terminals accept 24-18 AWG conductors
- ▼ 7.5mA maximum load per input terminal.
- ♦ Requires PCS configuration software for setup.

- ★ Order NF1000G3N2 controller for use with Johnson Controls.
- + Not available with NF1000G3N2 controllers.
- † 3000G3C controller

# Square D® Powerlink® Remote Source Controller

The Square D Powerlink Remote Source Controller (RSC) provides additional scheduling and dry-contact inputs via high speed Ethernet connectivity that links a wide variety of input devices to a 2000 or 3000 level Square D Powerlink system.

## PRODUCT FEATURES

- High Speed Connectivity
- Ethernet communication eliminates bottlenecks typically associated with serial devices.
- Uses existing LAN infrastructure to reduce input wiring cost.
- Uses convenient radial feeds to independent input devices; this avoids pitfalls that are typically associated with daisy-chained network digital switches.

## POWERFUL CONTROL CAPABILITY

- Supports (16) 2-wire inputs, (8) 2-wire inputs with status output, or (8) 3-wire inputs.
- Fully configurable from LCD display/keypad or via PCS software.
- Specifically designed to operate in conjunction with 2000 and 3000 level controllers. Any RSC input can be set up to control any remotely operated circuit breaker connected to the system.
- Assignable input timers, input synchronization, and programmable behavior according to specified time period.
- Provides an additional (16) independent time schedules that can be configured to operate any circuit breaker or zone configured on the system.



Remote Source Controller

## TECHNICAL INFORMATION

Dimensions	<b>12" x 12" x 6" (304.8 mm x 304.8 mm x 152.4 mm)</b>
Mounting	<b>Wall mount</b>
Ethernet Port	<b>(1) 10BaseT port</b>
Inputs	<b>(16) dedicated 2-wire inputs or (8) 3-wire inputs</b>
Outputs	<b>(8) outputs (max of 60mA total for all outputs combined)</b>
Auxiliary Power	<b>24Vdc (100 mA max)</b>
Terminal Wire Range	<b>#24-18AWG</b>
Input Voltage	<b>120/240/277Vac</b>
Input Power Requirements	<b>20VA max</b>
Standards	<b>UL Listed 916 Energy Management Equipment</b>

\*For Diagram see technical section page 34

## PRODUCT FEATURES

- NEMA Type 1 enclosure w/knockouts
- UL Listed

CATALOG NUMBER	Voltage
<b>RSC16G3120</b>	120V
<b>RSC16G3240</b>	244V
<b>RSC16G3277</b>	277V

# Accessories

## SLAVE ADDRESS SELECTOR

The Slave Address Selector is required for each slave panel connected to a subnet. The slave address selector establishes a unique system address for the panel that is both essential for system operation and useful when the system is accessed from a remote location. The slave address selector plugs directly onto control buses.

- Rotary operated switch labeled 0–7 for addressing panels
- Removable terminal block for connecting subnet cable
- Modular plug for connecting the Slave Address Selector to smart bus using the Slave Bus Connect Harness



## SLAVE BUS CONNECT HARNESS ASSEMBLY

The Slave Bus Connect Harness assemblies are required in slave panels furnished with two control buses. The harness contains modular plugs on each end.



## COLUMN-WIDTH CONTROLLER CABLE

A Column-width Controller Cable is required to connect the power supply to the controller when used in an NF Column-width Panelboard.



## REMOTE MOUNTING ADAPTER

The Remote Mounting Adapter provides a means for mounting a Powerlink controller and power supply in a separate enclosure. This bracket is ideal for retrofit applications where all 42 circuit spaces in the panelboard are required for branch circuit breakers.



## CONTROLLER FRONT PANEL SERIAL CABLE

The Controller Front Panel Serial Cable is used to make direct RS-232 connections from the controller to a PC or laptop computer.



## CUSTOM BARRIER KIT

The custom barrier kit provides a heavy-duty barrier for separating class II control circuits from power wiring.



## MODEM KIT

This kit, which is designed specifically for Square D Powerlink G3 controllers, contains all the necessary components for use with the controller.



## RS-485/RS-232 CONVERTER KIT

The RS-485/RS-232 converter kit allows connection from the RS-485 port of the controller to the serial port of a personal computer.



## SUBNET CABLE

Four wire cable for connecting panels together in a subnet configuration



CATALOG NUMBER	DESCRIPTION
NFSELG3	Slave address selector
NF2HG3	Slave bus connect harness
NFCW3G	Column width controller cable
NFADAPTERG3	Remote mounting adaptor
NFFPC3G	Controller front panel serial cable
NFASBKG3	Custom barrier kit
6382G3MODEM	Modem kit
6382RS485G3KIT	RS-485 converter kit
	<b>Subnet Cable</b>
NFSN06	6' (1.83 m) sub-net cable
NFSN10	10' (3.05 m) sub-net cable
NFSN25	25' (7.62 m) sub-net cable
NFSN50	50' (15.24 m) sub-net cable

# Square D® Powerlink® Device Power Supply

The Square D® Powerlink® Device Power Supply is used to distribute power on a C-Bus™ network. Placed on the network, device power supplies will provide the current necessary for operating a variety of passive Square D Clipsal® devices.

A Device Power Supply consists of a Clipsal 8M enclosure containing one or two Clipsal Power Supplies (120 or 277Vac).



Powerlink Device Power Supply

## TECHNICAL INFORMATION

Nominal Line Voltage	<b>Operates at 120 or 277Vac, ± 10%, with a frequency range from 50–60 Hz</b>
Maximum Line Current	<b>9.9 mA for 120V power supply 4.3 mA for 277V power supply</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to the line</b>
Current Output	<b>350 mA (single power supply unit) 700 mA (dual power supply unit)</b>
Dimensions	<b>12.57 in. (L) x 8.88 in. (W) x 3.8 in. (D) [319 mm (L) x 226 mm (W) x 97 mm (D)]</b>
Weight	<b>One power supply: 8.84 lb (4.01 kg) Two power supplies: 9.28 lb (4.21 kg)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508A Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 30

## PRODUCT FEATURES

- Surface-mount NEMA Type 1 enclosure with cover
- Unit and C-Bus LEDs indicate the status of the line voltage and the network
- Sources up to 700 mA (dual power supplies) to the C-Bus network
- 120 or 277Vac models available
- UTP connection jumper included for dual supply

CATALOG NUMBER	DESCRIPTION
NFDP1120G3C	120V Powerlink Single Power Supply
NFDP2120G3C	120V Powerlink Dual Power Supply
NFDP1277G3C	277V Powerlink Single Power Supply
NFDP2277G3C	277V Powerlink Dual Power Supply



# Square D® Powerlink® Device Router

The Square D® Powerlink® Device Router allows the exchange of data between a Powerlink NF3000G3C controller and Square D® Clipsal® devices.

The bidirectional device router can receive data from the Clipsal input devices and send the data to the Powerlink panel/network. It can also receive data such as a contact closure from the Powerlink input and send that data to a Clipsal output/network.

The device router consists of a Clipsal 8M enclosure containing a Clipsal PC Interface and a Clipsal Power Supply (120Vac or 277Vac). Communication between the device router and the NF3000G3C controller is made with the included 50-foot serial cable.



Powerlink Device Router

## TECHNICAL INFORMATION

Nominal Line Voltage	<b>Operates at 120 or 277Vac, ± 10%, with a frequency range from 50–60 Hz</b>
Maximum Line Current	<b>9.9 mA for 120V device router 4.3 mA for 277V device router</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to the line</b>
Current Output	<b>350 mA to the C-Bus network</b>
Status Indicators	<b>Unit and Unit/Comms: Line voltage, unit power, and data transmission C-Bus: Power levels and presence of C-Bus clock</b>
Serial Connection	<b>(1) 9-pin RS-232 D-type serial connector; (2) RS-232 RJ-45 connectors</b>
C-Bus Connection	<b>(2) RJ-45 sockets for connection to the C-Bus network</b>
Data Cable	<b>50 ft serial</b>
Dimensions	<b>12.57 in. (L) x 8.88 in. (W) x 3.8 in. (D) [319 mm (L) x 226 mm (W) x 97 mm (D)]</b>
Weight	<b>9.1 lbs (4.13 kg)</b>
Operating Environment	<b>Temp.: 32° to 113°F (0° to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508A Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 30

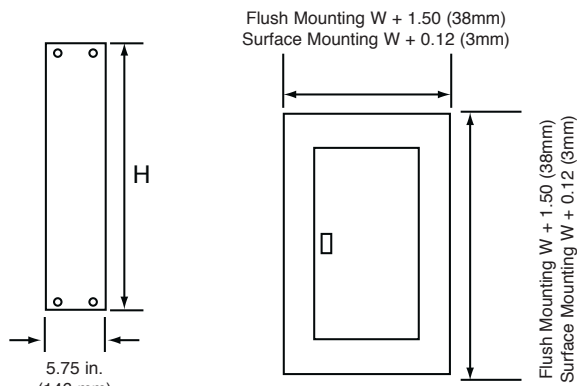
## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure, with cover
- Unit, Unit/Comms, and C-Bus LEDs indicate the status of data transmission and power to the unit and the network
- System network clock for synchronizing communications data
- Network power source, supplying up to 350 mA
- 120 or 277Vac models available

CATALOG NUMBER	DESCRIPTION
NFDR120G3C	120V Powerlink Device Router
NFDR277G3C	277V Powerlink Device Router

## DIMENSIONAL DRAWINGS

### NF Panelboard (indoor enclosure)



Typical Enclosure Side View

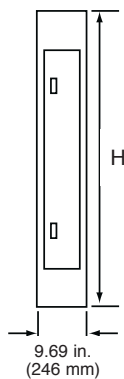
Typical Enclosure Front View

\*These dimensions are standard. Please consult factory for special requirements.

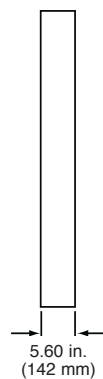
Max. Main Lug Ampere Rating	Max. Number of Circuits	(H) Enclosure Height		Max. Main Lug Ampere Rating	Max. Number of Circuits	(H) Enclosure Height	
		In.	mm			In.	mm
125A	12	26	660	125A (EDB, EGB, EJB)	18	32	813
	18	26	660		30	38	965
	30†	32	813		42	44	1118
250A	30	38	965	100A (HDL, HGL, HJL, HLL)	12	38	965
	42	44	1118		18	38	965
	54	50	1270		30†	44	1118
100A (FIL)	12	38	965	400A	30	50	1270
	18	38	965		42	56	1422
	30†	44	1118		54	62	1575
250A (JDL, JGL, JLL, JLL)	30	50	1270	600A	30	50	1270
	42	56	1422		42	56	1422
	54	62	1575		54	62	1575
800A*	30	50	1270	400/600A (LCL, LIL)	30	68	1727
	42	56	1422		42	74	1880
	54	62	1575		54	80	2032
400A (LAL, LHL)	30	62	1575				
	42	68	1727				
	54	74	1880				

†304W only \*800A Panelboards are 8¾ in. deep

### Column Width Panelboard



Typical Enclosure Front View



Typical Enclosure Side View

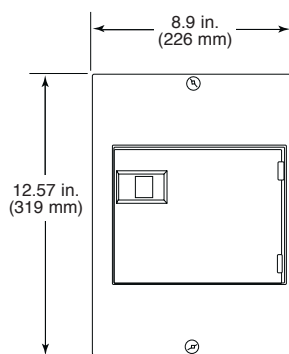
Ready-to-Assemble (Also Available Factory Assembled)  
**Column Width - Main Lugs Only**

Max. Number of Circuits	Max. Main Lug Ampere Rating	(H) Enclosure Height	
		In.	mm
30	125A	59	1499
42	225A	71	1803

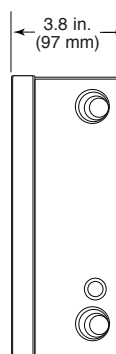
**Column Width - Main Circuit Breaker**

Max. Number of Circuits	Max. Main Lug Ampere Rating	(H) Enclosure Height	
		In.	mm
30	125A	59	1499
42	225A	71	1803

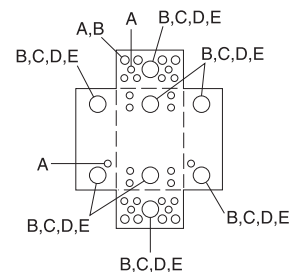
### Square D® Powerlink® Device Power Supply/Device Router



Front view showing height and width



Side view showing depth



Conduit knockouts for the 8M enclosure

Clipsal 8M Enclosure Knockouts					
Symbol	A	B	C	D	E
Conduit Size	½	¾	1	1¼	1½

## SHORT CIRCUIT RATING TABLE

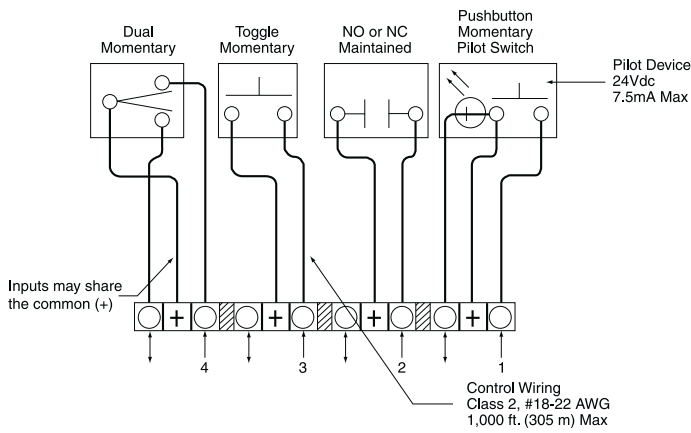
This table lists the UL short-circuit current ratings for NF panelboards including ECB-G3 circuit breakers. The ratings apply to an integral main located in the same enclosure or a remote main located in a separate enclosure.

<b>NF Panelboard SCCR Ratings</b>			
<b>Max. System Voltage</b>	<b>Max. Short Circuit Current Rating</b>	<b>Integral or Remote Main Circuit Breaker</b>	<b>Square D Branch Circuit Breaker Catalog Designation</b>
120 120/240 240	65,000	EG, FH, FG, KH, LH, MH, MX, HG, JG	EDB, EDB-EPD
		EG	ECB-G3
	100,000	EJ, FC, FJ, KC, LC, LX, HJ, JJ	EDB, EDB-EPD, EGB
		EJ, FC, KC, HJ, JJ	ECB-G3
	125,000	HL, JL	EDB, EDB-EPD, EGB, ECB-G3
	200,000	FI, KI, LI, LXI	EDB, EDB-EPD, EGB, EJB
		FI, KI	ECB-G3
		Class J or T (600 V) 200 A max. fuses	
277 480Y/277	35,000	EG, FG, HG, JG, KH, LH	EDB, EDB-EPD
		EG, HG, JG	ECB-G3
	65,000	EJ, FC, FJ, KC, LC, LX, HJ, JJ	EDB, EDB-EPD, EGB
		EJ, FC, KC, HJ, JJ	ECB-G3
	100,000	HL, JL	EDB, EDB-EPD, EGB, EJB
		400 A max. fuses	
	200,000	FI, KI, LI, LXI	EDB, EDB-EPD, EGB, EJB
		FI, KI	ECB-G3
		200 A max. fuses	EDB, EDB-EPD, EGB, EJB, ECB-G3
	RMS Symmetrical Amperes		

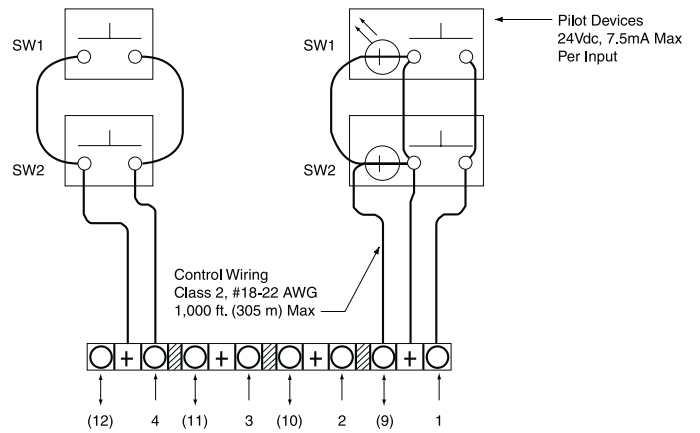
# WIRING DIAGRAMS

This section contains wiring diagrams for the Square D Powerlink G3 systems

## TYPICAL LOW VOLTAGE INPUT CONNECTIONS

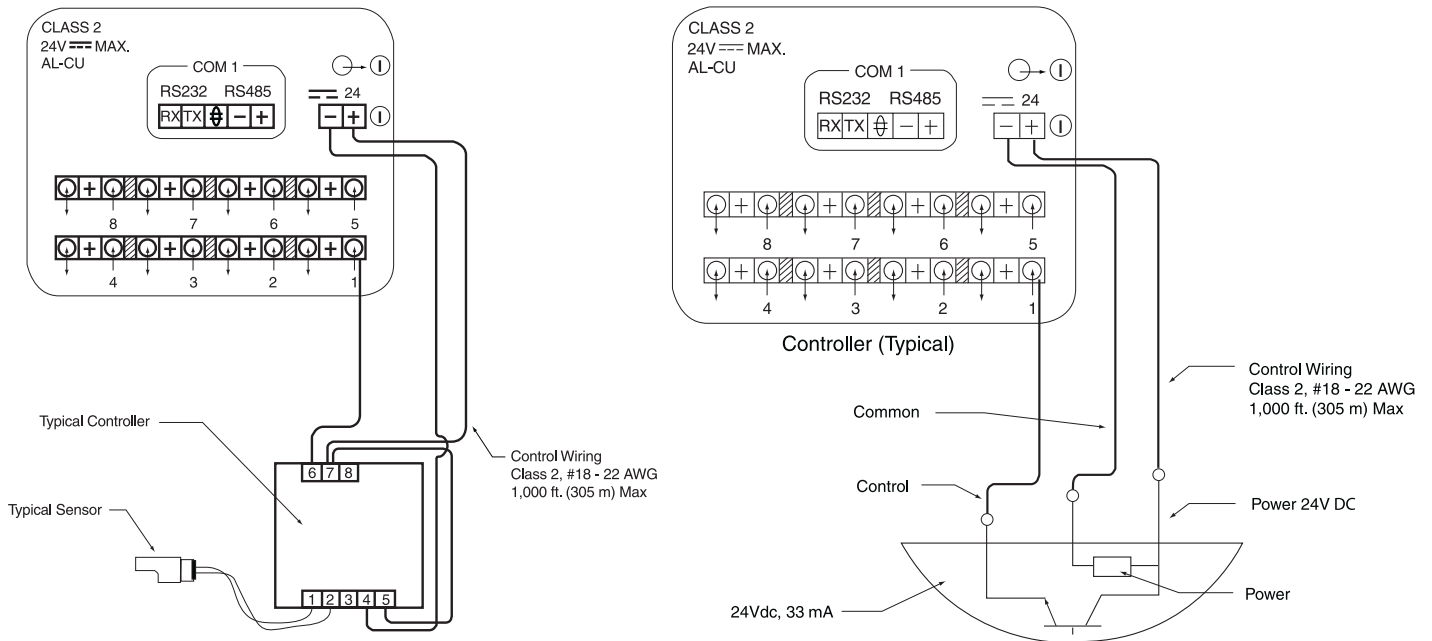


## VARIOUS LOW VOLTAGE SWITCH TYPES



## TYPICAL SWITCH TYPES WIRED IN PARALLEL

## TYPICAL PHOTO CONTROLLER WIRING DIAGRAM

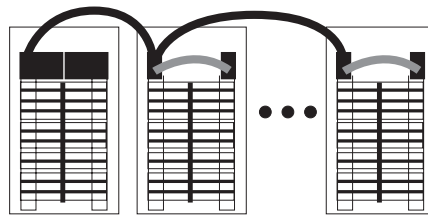


## SYSTEM ARCHITECTURE

Three levels of communications are provided that can be easily tailored to individual application requirements.

### SUBNET COMMUNICATIONS

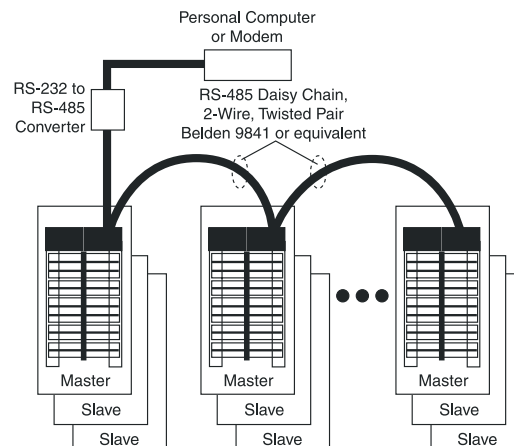
- Each Square D Powerlink G3 Controller can directly operate up to eight control buses.
- Controller signals the control buses to switch the associated branch circuits and polls each Square D® Powerlink® G3 Circuit Breaker to determine its actual status.
- Communications between the controller and the control buses are made with a 4-wire, Class 1 communications cable (Belden 27326 or equivalent).
- Slave panels (those containing control buses and remotely operated circuit breakers, but no controller) may be mounted up to 400 feet away from the master panel that contains the controller.



Subnet communications allow one controller to operate up to 168 remotely operated branch circuits.

### AUTOMATION NETWORK

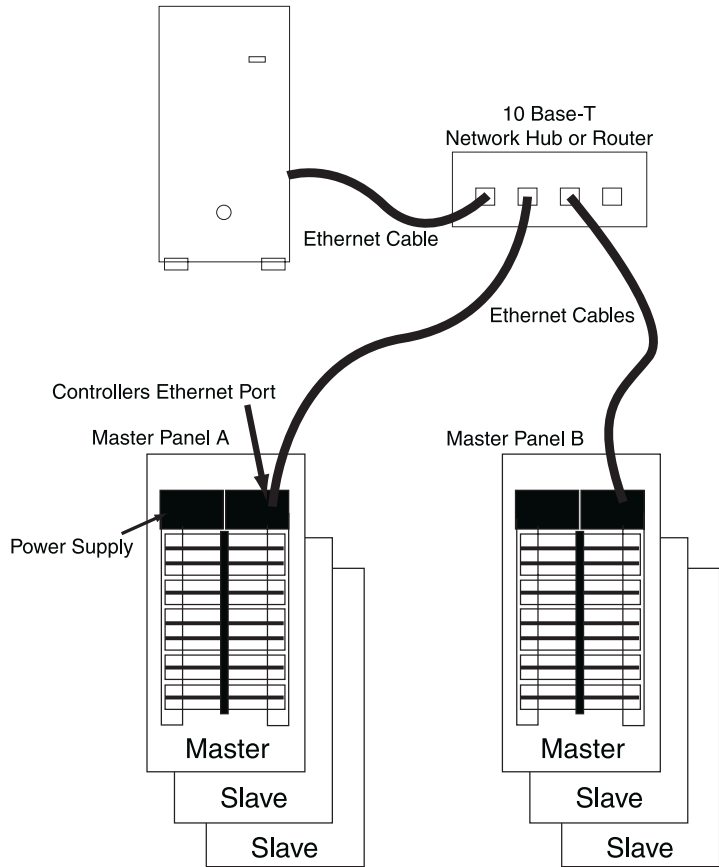
- Each controller provides both RS-485 and RS-232 serial ports. Provides access up to 247 controllers using an RS-485 multi-drop configuration.
- An automation level network can also be used to communicate with other building systems such as energy management systems and card access controllers. The automation network uses widely accepted and supported industrial-proven protocols used by many building automation manufacturers and systems integrators
  - Modbus® ASCII/RTU open protocol in all Square D Powerlink G3 Controllers
  - DMX512 protocol in automation level network for theatrical lighting applications in 1000, 2000, and 3000 level controllers
  - Optional JCI-N2 protocol for 1000 level controllers
  - Optional C-Bus™ Network capability with NF3000G3C controller and device router



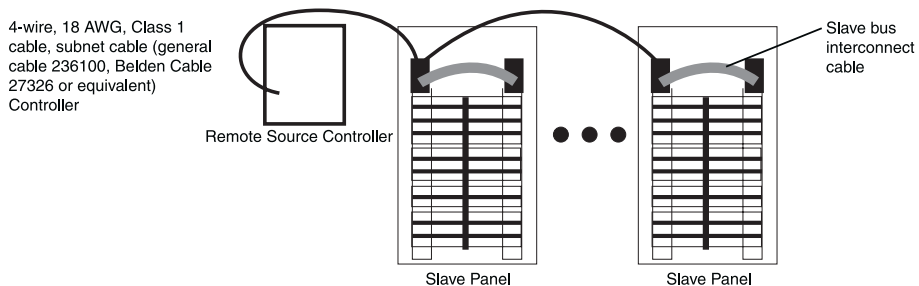
Automation networks provide remote access to the lighting control system over an RS-485 network. An RS-485 network consists of low cost, 2-wire, Class 2 communications cable, Belden 9841 or equivalent.

**ETHERNET CONNECTIVITY**

Square D Powerlink G3 2000 and 3000 level controllers have integrated onboard Ethernet capability. In addition to providing high-speed Ethernet access, these controllers allow fast peer-to-peer (P2P) connectivity between panels. With 2000 and 3000 level systems, master panels can share inputs, schedules, and zone status.

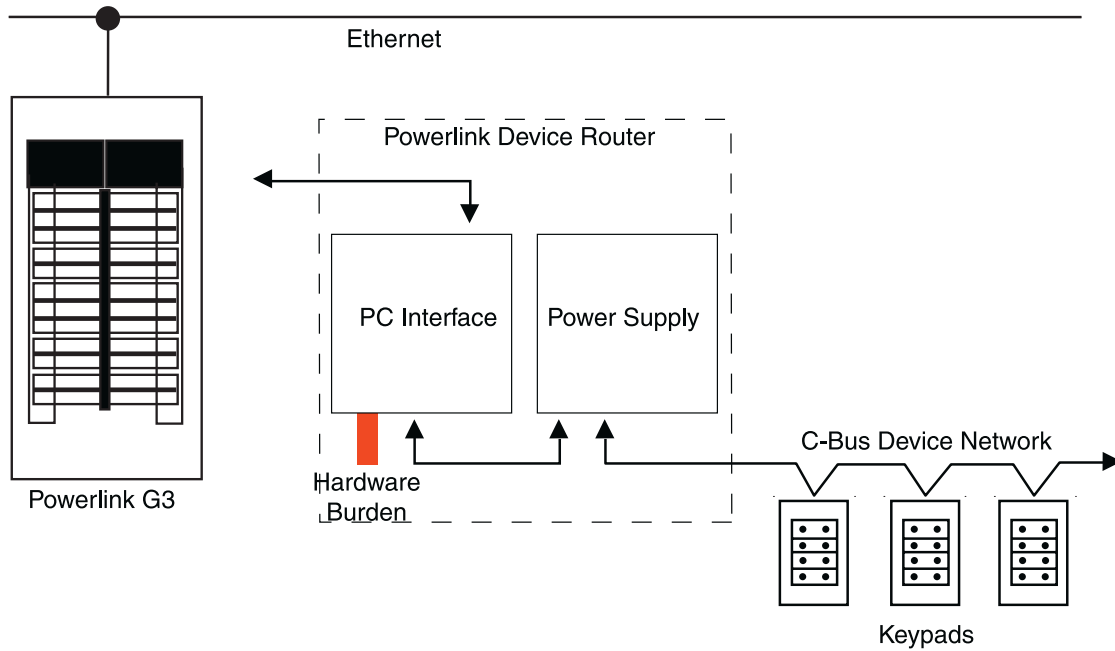


Square D® Powerlink® Remote Source Controller



# C-BUS™ NETWORK

Below is a typical one-line diagram for creating a local area network using the C-Bus Network capability of level 3000G3C controllers. All cables shown below are CAT-5.



Square D<sup>®</sup>  
Clipsal<sup>®</sup> Lighting  
Control





# Introduction to Square D® Clipsal® Lighting Control

The availability of low cost, powerful microprocessors for building and home control and management systems has created unprecedented customer expectations for increased control, connectivity and integration of electrical and low voltage systems.

**Sophisticated styling** – Square D® Clipsal® brings a distinctly sophisticated look to lighting applications. Clean lines. Sleek glass. Every detail and surface of these keypads and touch screens are designed to complement contemporary commercial and residential environments.

**System simplicity** – With its unique distributed system, installation couldn't be easier. You can place relays and dimmers in various locations and connect them directly to the network – eliminating the need to run cable back to a separate enclosure near centrally located processors. Keeping the design simple also adds up to greater system reliability.

Since the Square D Clipsal system uses standard Cat 5 cabling, there's no special cable to order or keep in supply. So it's much easier to address last-minute change orders or to complete a job without wondering if you have the right materials on hand.

**Fully scalable solution** – Whether you're creating a lighting control system for a single room or a whole facility, Square D lighting control offers scalable systems to fit your exact needs. Our C-Bus™ solutions are designed around the size and requirements of your application. All this with a common platform and easy installation practices. Talk about flexibility.

**Clipsal® keypads** – These aesthetically pleasing faceplates lend a sophisticated look to virtually any space. They're as elegant as they are well-engineered.

**Clipsal touch screens** – Our unified wall-mounted panels allow you to control lighting systems and accessories with the touch of a finger. Designed with versatility in mind, these sleek touch screens are easy to install, customize and use. They're compact yet powerful. Simple to operate yet highly flexible. A desktop model is available when wall space is limited or for added convenience.

# Square D® Clipsal® Neo™ Keypads

Square D® Clipsal® Neo™ Keypads offer localized finger-tip control of lighting and other electrical devices. With over 1,000 custom color combinations available, these elegant keypads are suitable for virtually any decor.

One compact Neo keypad can take the place of many single switches, ON/OFF toggles, dimmers, and timers. Available in your choice of a two-, four-, or eight-button keypad, Neo's modern style is complemented by orange and blue LEDs that instantly show the status of controlled devices.



Neo Style 8 Button Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Calculated with the C-Bus Calculator, a software utility used to evaluate the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Status Indicators	<b>Two-color (orange and blue) user-configurable LEDs</b>
Locator Option	<b>User-configurable, adjustable blue LED illumination for locating the unit in darkness, with "ignore first button press" option</b>
Scene Control	<b>Up to four scenes per keypad, ten addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 sec intervals</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24–16 AWG (0.2–15 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 2.95 in. (W) x 0.87 in. (D) [116 mm (L) x 75 mm (W) x 22 mm (D)]</b>
Mounting:	<b>Centers 3.31 in. (84 mm)</b>
	<b>Enclosure (Not Provided) Plaster mud ring (Raco 8771 or equal) w/ minimum internal width 2.05 in. (52 mm) (not provided) Single gang box (Carlon A58381D-CAR or equal) w/minimum internal width 2.05 in. (52 mm) (not provided)</b>
Weight	<b>2.7 oz (77 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) • RH: 95%, noncondensing</b>
Storage Environment	<b>Temp.: 14°F to 140°F (–10°C to 60°C) • RH: 95%, noncondensing</b>
Standards:	<b>UL: Listed 916 Energy Management CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>
Color Options	<b>Slate, white, cream, gold, black, brown, soft gray, desert sand and brushed aluminum</b>

\*\* For additional ordering information see technical section page 79

## PRODUCT FEATURES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Scene control includes ten group addresses per scene, four scenes per keypad
- Independent timers available for each button
- Standard built-in infrared receiver permits keypad control at a distance with an optional infrared handheld remote (Sold Separately)
- Dual-color LED windows on each button can glow in cool blue, orange, or combinations of both, indicating when a controlled device is ON or OFF
- Auto "fallback" can dim button LEDs at a set time after the last key press
- Locator LEDs can illuminate the top and bottom of the button area in cool blue, helping a user find the keypad in dim light

## FUNCTIONAL AESTHETICS

- Clean-lined low-profile keypads are wall mounted without external fittings
- Optional button covers have ID windows, enabling quick identification of lighting scenes or controlled devices (Sold Separately)
- Distinctively designed multi-layer cover plate consists of button covers, an outer surround, and an inner surround
- Color schemes are easily customized and modified to suit personal taste or the decor

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Configured by using Learn Mode or a personal computer connected to the network

Order numbers for the Neo Keypad assemblies indicate the number of buttons desired on the keypad and the color of each customizable component (inner surround, outer surround, and button cover). Color numbers are taken from the "Neo Colors" table (page 78) and must be given in the following order: outer surround, inner surround, and button covers.

CATALOG NUMBER	DESCRIPTION
<b>SLC5052NL( )</b> Number of Buttons (2)	Neo Keypad Assembly Button Covers <b>SLC5052NRP( )</b> - 2 button keypads (5 pack) Button Covers <b>SLC5052NRI( )</b> with ID Windows
<b>SLC5054NL( )</b> Number of Buttons (4)	(2, 4, or 8 buttons) Button Covers <b>SLC5054NRP( )</b> - 4 button keypads (5 pack) Inner Surround <b>SLC5050IS( )</b> (pack of 5)
<b>SLC5058NL( )</b> Number of Buttons (8)	Button Covers <b>SLC5058NRP( )</b> - 8 button keypads (5 pack) Outer Surround <b>SLC5050OS( )</b> (pack of 5)

# Square D® Clipsal® Saturn Keypads

Square D® Clipsal® Saturn Keypads offer localized finger-tip control of lighting and electrical services. These elegant keypads incorporate a unique glass cover plate that is easy to install, customize, and use.

By virtue of the variety of button configurations available, one compact Saturn keypad can take the place of many single operation switches, ON/OFF toggles, dimmers, and timers.

Available in a two-, four-, or six-button keypad, Saturn's modern style is complemented by orange and blue LEDs that can instantly show the status of controlled devices.



Saturn Style 6 Button Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Determined with the C-Bus Calculator, a software utility used to evaluate the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Status Indicators	<b>Two-color (orange and blue) user-configurable LEDs</b>
Locator Option	<b>User-configurable, adjustable LED to help locate the unit in darkness, has “ignore first button press” option</b>
Scene Control	<b>Up to four scenes per keypad, ten addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 sec intervals</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24-16 AWG (0.2–1.31 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 2.95 in. (W) x 1.1 in. (D) [116 mm (L) x 75 mm (W) x 28 mm (D)]</b>
Mounting	<b>Plaster mud ring (Raco 8771 or equal) w/ minimum internal width 2.05 in. (52 mm) (not provided) Single gang box (Carlon A58381DCAR or equal) w/minimum internal width 2.05 in. (52 mm) (not provided)</b>
Weight	<b>4.66 oz (132 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management, CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device, EN61000-4-2 Immunity to ESD</b>
Color Options	<b>White, cream, black, and mocha</b>

\*For Diagram see technical section page 79

## PRODUCT FEATURES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Scene control includes up to ten group addresses per scene and four scenes per keypad
- Independent timers available for each button
- Dual-color LED windows on each button can glow in cool blue, orange, or combinations of both, indicating when a controlled device is ON or OFF
- Auto “fallback” can dim button LEDs at a set time after the last button press
- Locator LED can illuminate the keypad, helping a user find it in dim light

## FUNCTIONAL AESTHETICS

- Distinctively designed transparent impact-resistant glass cover plate with silver buttons that can glow blue or orange
- Clean-lined keypads are wall mounted without external fittings
- Low-profile keypad extends only 0.5 in. out from the wall
- Colors are easily modified to suit personal taste or the décor
- Optional button covers with labels, enabling quick identification of lighting scenes or controlled devices

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Configured by using Learn Mode or a personal computer connected to the network

Order numbers for the Saturn keypad assemblies indicate the number of buttons desired on the keypad and the color of the cover plate. White (WE), Black (BK), Mocha (BR)  
For example, SLC5086NLBK represents an order for a Saturn keypad with six buttons and a black cover plate. The order number for a two-button keypad in mocha would be SLC5082NLBR

CATALOG NUMBER	DESCRIPTION	ACCESSORIES
<b>SLC5082NL( )</b> Number of Buttons (2)	Saturn Keypad Assembly	<b>SLC5080LC8</b>
<b>SLC5084NL( )</b> Number of Buttons (4)	(2, 4, or 6 buttons)	Pre-labeled button caps (1 ea. of 66 frequently used labels such as Lounge, Meeting, Scene 1, etc.)
<b>SLC5086NL( )</b> Number of Buttons (6)		

# Square D® Clipsal® Neo™ Keypads with Dynamic Labeling Technology™

Square D® Clipsal® Neo™ Keypads with Dynamic Labeling Technology™ (DLT) combine a Neo style cover plate, programmable keypad buttons, and easily customized labels on a backlit LCD screen that eliminates the need for custom labels.

These keypads are designed to be easy to install, customize, and use. By virtue of the variety of button configurations available, one compact DLT keypad can take the place of many single operation switches, ON/OFF toggles, dimmers, and timers.

Cool blue LEDs light the five keypad buttons, complementing the keypad's sleek lines and instantly showing the status of controlled devices.



Neo Style DLT Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Status Indicators	<b>Blue, one dimmable LED per button</b>
Backlight	<b>White, dimmable, user configurable</b>
Locator Option	<b>User-configurable, adjustable blue LED for locating the unit in darkness, with "ignore first button press" option</b>
Scene Control	<b>4 scenes per keypad, 10 addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 second intervals</b>
Screen	<b>64 x 128 pixels LCD</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24–16 AWG (0.2–1.31 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 2.95 in. (W) x 1.20 in. (D) [116 mm (L) x 76 mm (W) x 32 mm (D)]</b>
Mounting	<b>Standard plaster (mud) ring or wall box (not provided), minimum internal width 2.05 in. (52 mm) Centers: 3.31 in. (84 mm)</b>
Weight	<b>3.35 oz (95 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 79

## PRODUCT FEATURES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Keypads have five physical buttons—four control buttons and one scroll/page button—combined with two screens of labels, for a total of eight control buttons and two scroll/page buttons
- Scene control includes ten group addresses per scene, four scenes per keypad
- Independent timers available for each button
- Button LEDs can be used as locator lights in the dark
- Time clock can be displayed at the bottom of the screen
- Displays up to 8 languages from a set of more than 65

## FUNCTIONAL AESTHETICS

- 64 x 128 pixel LCD screen with a white backlight
- Editable LCD labels, available for each button or control group, can display text, symbols, and graphics
- Dynamic graphic displays, such as bar graphs, can be enabled or disabled
- Bitmaps can be downloaded for each group address or scene
- Clean-lined low-profile keypads are wall mounted without external fittings
- Distinctive two-layer cover plate consists of an outer surround and an inner surround

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or a personal computer connected to the network

CATALOG NUMBER	DESCRIPTION
SLCS055DL	Neo Keypad with DLT in slate and brushed aluminum

# Square D® Clipsal® Saturn™ Keypads with Dynamic Labeling Technology™

Square D® Clipsal® Saturn™ Dynamic Labeling Technology™ (DLT) Keypads combine a Saturn style glass cover plate, programmable keypad buttons, and easily customized labels on a backlit LCD screen that eliminates the need for custom labels.

These keypads are designed to be easy to install, customize, and use. By virtue of the variety of button configurations available, one compact Saturn Keypad with DLT can take the place of many single operation switches, ON/OFF toggles, dimmers, and timers. The five keypad buttons are lit with cool blue LEDs that complement the keypad's sleek lines and show the status of controlled devices.



Saturn Style DLT Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Status Indicators	<b>Blue, one dimmable LED per button</b>
Backlight	<b>White, dimmable, user configurable</b>
Locator Option	<b>User-configurable, adjustable blue LED illumination for locating the unit in darkness, with "ignore first button press" option</b>
Scene Control	<b>4 scenes per keypad, 10 addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 second intervals</b>
Screen	<b>64 x 128 pixels LCD</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24–16 AWG (0.2–1.31 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 2.95 in. (W) x 1.20 in. (D) [116 mm (L) x 75 mm (W) x 30.4 mm (D)]</b>
Mounting	<b>Standard plaster (mud) ring or wall box (not provided), minimum internal width 2.05 in. (52 mm) Centers: 3.31 in. (84 mm)</b>
Weight	<b>5.29 oz (150 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment, CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device, EN61000-4-2 Immunity to ESD</b>
Cover-Plate Colors	<b>White, cream, black, mocha</b>

\*For Diagram see technical section page 80

## PRODUCT FEATURES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Keypads have five physical buttons—four control buttons and one scroll/page button—combined with two screens of labels, for a total of eight control buttons and two scroll/page buttons
- Scene control includes ten group addresses per scene, four scenes per keypad
- Independent timers available for each button
- Button LEDs can be used as locator lights in the dark
- Time clock can be displayed at the bottom of the screen
- Displays up to 8 languages from a set of more than 65

## FUNCTIONAL AESTHETICS

- 64 x 128 pixel LCD screen with a white backlight
- Editable LCD labels, available for each button or control group, can display text, symbols, and graphics.
- Dynamic graphic displays, such as bar graphs, can be enabled or disabled
- Bitmaps can be downloaded for each group address or scene
- Clean-lined low-profile keypads are wall mounted without external fittings

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or a personal computer connected to the network

Order numbers for the Saturn DLT keypads include the stock number (SLC5085DL) and the code for the color of the cover plate: Black (BK), Mocha (BR), White (WE) and Cream (CM). For example, SLC5085DLBR represents a complete catalog number for a Saturn DLT keypad with a mocha cover plate.

CATALOG NUMBER	DESCRIPTION
SLC5085DL ( )	Saturn Keypad with DLT in white (WE), cream (CM), black (BK), or mocha (BR)

# Square D® Clipsal® Neo™ Decorator Style Keypads



Square D® Clipsal® Decorator Style Neo™ Keypads offer localized finger-tip control of lighting and electrical services. These elegant keypads incorporate a unique cover plate (ordered separately) that is easy to install, customize, and use. These Decorator style keypads are ordered without a face plate and can fit in any existing Decorator style keypad face plate. Matching face plates are also available in a variety of colors.

By virtue of the variety of button configurations available, one compact Neo Decorator style keypad can take the place of many single operation switches, ON/OFF toggles, dimmers, and timers.

Available in a one-, two-, three- or four- button keypad, Neo's modern style is complemented by blue LEDs that can instantly show the status of controlled devices.



Neo 4 Button Decorator Style Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Determined with the C-Bus Calculator, a software utility used to evaluate the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Locator Option	<b>User-configurable, adjustable LED to help locate the unit in darkness, has "ignore first button press" option</b>
Scene Control	<b>Up to 4 scenes per keypad, 10 addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 second intervals</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24–16 AWG (0.2–1.31 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 3.0 in. (W) x .91 in. (D) [116 mm (L) x 76 mm (W) x 23 mm (D)]</b>
Weight	<b>2.9 oz (82 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal FCC: Part 15.101, Class B Digital Device</b>
Color Options	<b>Slate, White, Cream, Gold, Brown, Black, Soft Grey, Desert Sand and Brushed Aluminum (Light Almond and Ivory available in late 2008)</b>

\*For Diagram see technical section page 80

## MULTI-FUNCTIONAL CAPABILITIES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Scene control includes up to ten group addresses per scene and four scenes per keypad
- Independent timers available for each button
- LED windows on each button can glow in cool blue or orange, indicating when a controlled device is ON or OFF
- Auto "fallback" can dim button LEDs at a set time after the last button press
- Locator LED can illuminate the keypad, helping a user find it in dim light
- Has infra red remote capabilities with Square D Clipsal remotes

## FUNCTIONAL AESTHETICS

- Distinctively designed cover plate with silver buttons that can glow blue or orange
- Clean-lined keypads are wall mounted without external fittings
- Low-profile keypad extends only 0.5 in. out from the wall
- Colors are easily modified to suit personal taste or the décor

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Configured by using Learn Mode or C-Bus™ software

# Square D® Clipsal® Saturn™ Decorator Style Keypads



Square D® Clipsal® Decorator Style Saturn™ Keypads offer localized finger-tip control of lighting and electrical services. These elegant keypads incorporate a unique glass face plate that is aesthetically pleasing with silver buttons that glow blue or amber. Also, these Decorator style keypads can be ordered separately without a face plate to fit in any existing Decorator style keypad cover plate.

By virtue of the variety of button configurations available, one compact Saturn Decorator style keypad can take the place of many single operation switches, ON/OFF toggles, dimmers, and timers.

Available in a one-, two-, three- or four- button keypad, Saturn's modern style is complemented by orange and blue LEDs that can instantly show the status of controlled devices.



Saturn 4 Button Decorator Style Keypad

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 22 mA required for normal operation, drawn from the C-Bus network</b>
Number of Units on a Network	<b>Determined with the C-Bus Calculator, a software utility used to evaluate the total network current load</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to power (provided externally)</b>
Control Functions	<b>Load switching, dimming, timing, scene control</b>
Status Indicators	<b>Two-color (orange and blue) user-configurable LEDs</b>
Locator Option	<b>User-configurable, adjustable LED to help locate the unit in darkness, has "ignore first button press" option</b>
Scene Control	<b>Up to 4 scenes per keypad, 10 addresses per scene</b>
Timers	<b>1 sec–18 hr, 1 second intervals</b>
Response Time	<b>200 msec or less</b>
C-Bus Connection	<b>One terminal block to accommodate 24–16 AWG (0.2–1.31 mm<sup>2</sup>), CAT 5 UTP cable required</b>
Dimensions	<b>4.57 in. (L) x 3.0 in. (W) x .91 in. (D) [116 mm (L) x 76 mm (W) x 23 mm (D)]</b>
Weight	<b>2.9 oz (82 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>
Color Options	<b>White, Cream, Brown and Black (Light Almond and Ivory available in late 2008)</b>

\*For Diagram see technical section page 80

## MULTI-FUNCTIONAL CAPABILITIES

- Button configurations include multi-point switching and dimming, master ON/OFF switching, and scene settings
- Scene control includes up to ten group addresses per scene and four scenes per keypad
- Independent timers available for each button
- Standard built-in infrared receiver permits keypad control at a distance with an optional infrared handheld universal remote
- Dual-color LED windows on each button can glow in cool blue, amber, or combinations of both, indicating when a controlled device is ON or OFF
- Auto "fallback" can dim button LEDs at a set time after the last button press
- Locator LED can illuminate the keypad, helping a user find it in dim light

## FUNCTIONAL AESTHETICS

- Distinctively designed transparent impact-resistant glass cover plate with silver buttons that can glow blue or orange
- Low-profile keypad extends only 0.5 in. out from the wall
- Colors are easily modified to suit personal taste or the décor

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Configured by using Learn Mode or C-Bus™ software

# Square D® Clipsal® Monochrome Touch Screen

The Square D® Clipsal® Monochrome Touch Screen is a unified wall-mounted panel for controlling lighting systems and accessories with the touch of a finger.

Designed with versatility in mind, these sleek touch screens are easy to install, customize, and use. Compact yet powerful, the touch screen has numerous configurations available, making it an attractive alternative to multiple single operation switches, ON/OFF toggles, dimmers, and timers which can clutter up even the nicest wall.

The touch screen's elegant white cover plate can be replaced with an optional brushed aluminum Neo style cover plate. A desktop model is available when wall space is limited, or when a desktop location is more convenient.



Monochrome Touch Screen

## TECHNICAL INFORMATION

	Screen
Type	LCD active matrix
Size	3.94 in. (100 mm) diagonal 3.13 in. x 2.38 in. (80 mm x 62 mm)
Resolution	VGA, 240 x 320 pixels
Pixel Pitch	0.01 in. (H) x 0.01 in. (V) [0.24 (H) x 0.24 mm (V)]
Viewing Area	3.22 (H) x 2.44 in. (V) [81.8 mm (H) x 62.0 mm (V)]
Touch Overlay Type	Resistive
Viewing Angle	Typical horizontal: 35° left and right / Typical vertical: 42° up, 35° down
Luminance	60 cd/m2
Backlight	Four white LEDs can be configured to help locate unit in darkness. Light sensor automates backlight level control.
Memory	Storage for 100 pages
Voltage Requirements	15–36Vdc @ 40 mA required for normal operation, drawn from the C-Bus network
Number of Units per Network	Determined with the C-Bus Calculator, a software utility for evaluating the total network current load
Electrical Isolation	3.75 kV RMS from C-Bus to power (provided externally)
RS-232 Connector	(1) RJ-45 connector for high-speed programming and 6.5 ft of RS-232 cable (DB9 to RJ-45)
C-Bus Connection	Two terminal blocks to accommodate 24-16 AWG (0.2-1.31 mm <sup>2</sup> ), CAT 5 UTP cable required
Overall Dimensions	5.98 in. (W) x 4.53 in. (H) x 1.65 in. (D) [152 mm (W) x 115 mm (H) x 42 mm (D)]
Weight	48.5 oz (365 g), excluding cover
Operating Environment	Temp.: 50°F to 86°F (10°C to 30°C) RH: 95%, noncondensing
Standards	UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD

\*For Diagram see technical section page 81

## PRODUCT FEATURES

- Multiple control screens can include multi-point switching and dimming, master ON/OFF switching, schedules, and scenes with multiple loads
- Preset scenes and functions automates the task of adjusting lighting levels to different lamps and fixtures.
- Standard real-time clock enables schedules for lighting and other tasks
- Variable dimming fade rates can be configured according to load or lighting zone
- Locator option can be configured to help users find the screen in dim light
- Standard built-in infrared receiver allows operation at a distance with the included handheld remote control
- Astronomical clock

## FUNCTIONAL AESTHETICS

- Clean-lined low-profile touch screen can be wall-mounted without external fittings
- Optional Neo cover plate to match Neo keypads
- Display and controls can be configured with symbols, images, clocks and time, and text in multiple languages
- Area plans and other scenes can be graphically depicted

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Easily configured by using the Clipsal Piced software program

CATALOG NUMBER	DESCRIPTION	ACCESSORIES
SLC5000CT	Monochrome Touch Screen, wall mounted, with white cover plate. Comes with a 6.5 ft RS-232 cable, a handheld infrared remote controller, and a mounting bracket for installing the touch screen. The touch screen can also be mounted with an optional Wall Box	SLC5000CTWB Wall Box
SLC5000CTDGB	Monochrome Touch Screen and desktop stand in stainless steel and gray. Comes with a 16 ft lead, a 6.5 ft RS-232 cable, and a handheld infrared remote controller.	SLC5050CTS Neo style cover plate in brushed aluminum and slate



# Square D® Clipsal® Color Touch Screen

The Square D® Clipsal® Color Touch Screen is a unified panel for controlling lighting systems and accessories with the touch of a finger.

The touch screen's sophisticated appearance reflects the underlying craftsmanship of its design. Among its many capabilities, this powerful PC-based system supports graphical depiction of area plans, monitoring of various Clipsal devices, scheduling of lighting and other loads, finger-tip control of preset scenes, and operation from the touch screen or by remote controller.



Color Touch Screen

## TECHNICAL INFORMATION

### Screen

Type	LCD active matrix
Size	6.4 in. (diagonal)
Resolution	VGA, 640 x 480 pixels
Pixel Pitch	0.01 in. (H) x 0.01 in. (V) [0.204 mm (H) x 0.202 mm (V)]
Viewing Area	5.14 in. (H) x 3.82 in. (V) [130.6 mm (H) x 97.0 mm (V)]
Touch Overlay Type	Resistive membrane
Viewing Angle	Typical horizontal: 70° left and right / Typical vertical: 40° up, 70° down
Luminance	300 cd/m2
Backlight	Cold cathode with light sensor for automatic backlight level control
Memory	256 MB compact Flash memory, pre-programmed with panel firmware Backup: Lithium battery retains current date and time for 5 years.

### Components and Connectors

Front	Ethernet 10/100/RJ-45 terminal (hidden) Speaker (hidden), Infrared receiver, RS-232 via DB 9 terminal
Rear	C-Bus RJ-45 terminals (2) • Ethernet 10/100/RJ-45 terminal Composite video output via RCA terminal (75 ohm) • RS-232 via DB 9 terminal USB type A terminals (2) for future software support Remote infrared (IR) terminal (hardwired via a 3.5 mm mini-jack) External speaker/headphone terminal (3.5 mm mini-jack)
Overall Dimensions	9.8 in. (W) x 6.9 in. (H) x 2.9 in. (D) [246 mm (W) x 173 mm (H) x 72.5 mm (D)]
Weight	3.02 lbs. (1375 g) (excluding cover plate)
Operating Environment	Temp.: 50°F to 86°F (10°C to 30°C) / RH: 95% noncondensing
Standards	UL Listed 916 Energy Management Equipment CSA 22.2 Spec. 205 Signal Equipment FCC: Part 15.101, Class B Digital Device • EN61000-4-2 Immunity to ESD

## REQUIRED ACCESSORIES

	<b>Power Supply (Sold Separately)</b>
Operating Environment	Temp.: 32°F to 140°F (0°C to 60°C) / RH: approx. 90%, noncondensing
Storage Environment	Temp.: -4°F to approx. 185°F (-20°C to approx. 85°C) RH: approx. 95%, noncondensing
Power Supply Dimensions	6.9 in. (L) x 3.1 in. (W) x 1.8 in. (H) 175 mm (L) x 80 mm (W) x 45 mm (H)
Adaptor Box Dimensions	5.2 in. (L) x 2 in. (W) x .4 in. (H) 113 mm (L) x 50 mm (W) x 11 mm (H)
Weight	4.2 lb (1.925 kg)
Standards	UL: Listed 60950 Information Technology Equipment - Safety: General Requirements • CSA 22.2 Spec. 205 Signal Equipment FCC: Part 15.101, Class B Digital Device • EN61000-4-2 Immunity to ESD
Output Cable	65.6 ft (20 m)
DC Plug	7 pin, DIN, male

\*For Diagram see technical section page 81

## PRODUCT FEATURES

- Ability to configure controls including scenes, schedules, state changes and graphic animation
- Ability to customize buttons, sliders, photos and drawings
- Audio tools support use of custom WAV files for audible feedback and voice prompts
- Internal amplified speaker has volume control and external speaker terminal
- Built-in RJ-45 Ethernet and C-Bus network, RS-232, and USB terminals
- Infrared receiver for remote control and infrared input for accessories
- Controls can be password protected at multiple levels
- Astronomical and real time clocks

## FUNCTIONAL AESTHETICS

- Touch sensitive 6.4 inch (640 x 480) color LCD panel
- Light sensor for automatic backlight control
- Flush wall-mount design
- Cover plates available in Neo and Saturn styles
- Five color schemes available, complementing any décor

## DISTRIBUTED INTELLIGENCE

- Compatible with Powerlink® G3 3000C controller and all Clipsal components, including keypads, sensors, and dimmers



Power supply for color touch screen (sold separately)

CATALOG NUMBER	DESCRIPTION	REQUIRED	ACCESSORIES DESCRIPTION
SLC5050CTC	Neo™ style, Color Touch Screen, 6.4 inch screen, with Brushed Aluminum cover plate:	SLC5000CTCPS*	Color Touch Screen Power Supply
SLC5080CTC2WE	Saturn™ Style White	SLC5000CTCWB**	Color Touch Screen Wall Box
SLC5080CTC2BK	Saturn Style Black	SLC5000CTCNA**	Color Touch Screen Wall Nail Bracket
SLC5080CTC2BR	Saturn Style Mocha	SLC5000CTCRM**	Color Touch Screen Wall Plaster Board Bracket
SLC5080CTC2CR	Saturn Style Cream		

\* Note: Required for every color touch screen installation.  
\*\* Note: Color touch screen must be mounted with one of these options

# Square D® Clipsal® Ethernet Network Interface

The Square D® Clipsal® C-Bus™ Ethernet Network Interface unit is a C-Bus system support device designed to provide an isolated communications path between an Ethernet Network and a C-Bus Network.

The following functions can be achieved through this interface: programming C-Bus Units, issuing commands to a C-Bus Network including scheduled activities as well as monitoring and data logging of activities on a C-Bus Network.

The C-Bus Ethernet Network Interface may also generate the system clock for communications data synchronization on the C-Bus Network and provide a software selectable Network Burden.

For ease of installation the unit is DIN rail mounted.



Ethernet Network Interface

## TECHNICAL INFORMATION

C-Bus Voltage Requirements	<b>15–36Vdc</b>
Supply Current	<b>300 mA</b>
External Power Supply	<b>12Vdc @ 500 mA</b>
Electrical Isolation	<b>500V RMS continuous C-Bus/RS-232</b>
Status Indicators	<b>Ethernet LED/Comms LED</b>
C-Bus System Clock	<b>Software selectable</b>
C-Bus Network Burden	<b>Software selectable</b>
Ethernet Connection	<b>RJ-45 socket for connection to Ethernet</b>
Dimensions	<b>3.35 in. (H) x 2.83 in. (W) x 2.56 in. (D) [85 mm (H) x 72 mm (W) x 65 mm (D)]</b>
Weight	<b>4.59 oz (130 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Storage Environment	<b>Temp.: 14°F to 140°F (-10°C to 60°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment</b>

\*For Diagram see technical section page 81

## PRODUCT FEATURES

- Programming C-Bus Units
- Issuing commands to a C-Bus Network, including scheduled activities
- Monitoring and Data Logging of activities on a C-Bus Network
- Software selectable C-Bus System Clock

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Easily configured by using the C-Bus Toolkit software

CATALOG NUMBER	DESCRIPTION
SLC5500CN	Ethernet Network Interface

# Square D® Clipsal® PC Interface

The Square D® Clipsal® PC Interface (PCI) expands options for configuring, controlling, and monitoring C-Bus™ networks by providing an interface between the network and a personal computer (PC) or other external device.

The Clipsal PCI module easily mounts to a DIN rail and connects to external devices through its built-in connector ports. Power to the unit is provided through the C-Bus network.



PC Interface

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 32 mA required for normal operation, drawn from the C-Bus network</b>
Electrical Isolation	<b>500V RMS continuous C-Bus/RS-232</b>
Status Indicators	<b>Unit/Comms: Unit power and data transmission C-Bus: Power levels and presence of C-Bus clock</b>
Serial Port	<b>(1) 9-pin RS-232 D-type serial connector (2) RS-232 RJ-45 connectors</b>
Cable	<b>6.6 ft (2 m), with DB9 connectors</b>
C-Bus Connection	<b>(2) RJ-45 sockets for connection to a C-Bus network</b>
Dimensions	<b>2.84 in. (H) x 3.35 in. (W) x 2.60 in. (D) [72 mm (H) x 85 mm (W) x 66 mm (D)]</b>
Mounting	<b>DIN rail, 4M wide</b>
Serial Termination	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Storage Environment	<b>Temp.: 14°F to 140°F (-10°C to 60°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 82

## PRODUCT FEATURES

- Unit/Comms LED shows the status of the unit's power and of any data transmissions
- C-Bus LED shows the status of the network at the unit, including the level of network power and the presence of the C-Bus clock
- System network clock for synchronizing communications data
- Three RS-232 serial connectors for connecting to a PC or to external devices: (1) 9-pin D-type serial connector (female) and (2) 8-pin RJ-45 connectors
- Two C-Bus network connector ports: RJ-45 sockets
- Data cable for connecting PCI and personal computer, including DB9 connectors

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller

CATALOG NUMBER	DESCRIPTION
SLC5500PC	PC Interface

# Square D® Clipsal® Network Bridge

The Square D® Clipsal® Network Bridge provides a communication channel between Clipsal units on separate networks, expanding the total number of units that can be configured, controlled, and monitored.



Network Bridge

## TECHNICAL INFORMATION

Voltage Requirements	<b>15–36Vdc @ 18 mA required for normal operation, drawn from each connected C-Bus network</b>
Electrical Isolation	<b>3.5 kV RMS for 1 min (between networks)</b>
Status Indicators	<b>Network A, Network B Power ON, Communications in progress Power OFF - Not connected/insufficient power</b>
Propagation Delay	<b>250 ms (delay for message transfer between two adjacent C-Bus Networks)</b>
Interconnect Capacity	<b>In parallel: 51 networks (50 network bridges) In series: 7 networks (6 network bridges)</b>
C-Bus System Clock	<b>Software selectable</b>
C-Bus Network Burden	<b>Software selectable</b>
C-Bus Connection	<b>(2) pair of RJ-45 sockets for connection to C-Bus networks</b>
Dimensions	<b>2.84 in. (H) x 3.35 in. (W) x 2.60 in. (D) [72 mm (H) x 85 mm (W) x 66 mm (D)]</b>
Weight	<b>3.35 oz (95 g)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 82

## PRODUCT FEATURES

- Increases transmission distances by acting as a repeater station for data transmission
- Expands the total number of Clipsal devices that can operate on the system by isolating devices to individual networks [In parallel: 50 networks (50 network bridges) In series: 7 networks (6 network bridges)]
- Indicates each network's status level
- Stores operating status in non-volatile memory for recovery from a power outage
- Uses built-in connectors to connect to a C-Bus™ network

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and Powerlink® NF3000G3C controllers
- Easily configured by using the C-Bus Tool Kit software

CATALOG NUMBER	DESCRIPTION
SLC5500NB	Network Bridge

# Square D® Clipsal® Power Supply

The Square D® Clipsal® Power Supply is specifically designed to operate with the C-Bus™ network as a power source for passive Clipsal devices.

The power supply mounts to a DIN rail and connects to the C-Bus network through built-in RJ-45 connectors.

These devices are UL listed as Class 2 power supplies and are suitable for parallel operation. Up to five power supplies can be connected to a single C-Bus network.



Power Supply

## TECHNICAL INFORMATION

Nominal Line Voltage	<b>Operates at 120 or 277Vac, ± 10%, with a frequency range from 50–60 Hz</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to the line</b>
Current Output	<b>350 mA to the C-Bus network</b>
Status Indicators	<b>Unit: Unit power C-Bus: Network voltage level and presence of system clock</b>
Power Supplies per Network	<b>Up to five power supplies on a single C-Bus network</b>
C-Bus Connection	<b>(2) RJ-45 sockets for connection to the C-Bus network</b>
Cable	<b>(1) 15.75 in. (400 mm) patch lead included</b>
Dimensions	<b>3.35 in. (H) x 2.84 in. (W) x 2.60 in. (D) [85 mm (H) x 72 mm (W) x 66 mm (D)]</b>
Mounting	<b>DIN rail, 4M wide</b>
Weight	<b>7 oz (200 g)</b>
Operating Environment	<b>Temp.: 32°F to 104°F (0°C to 40°C) RH: 95%, noncondensing</b>
Storage Environment	<b>Temp.: 14°F to 140°F (-10°C to 60°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 82

## PRODUCT FEATURES

- Available in 120 and 277Vac models
- Regulating power supply compensates for line voltage and frequency variations, so there is constant output
- Sources up to 350 mA to the C-Bus network
- UL listed to operate in parallel with other Clipsal power supplies, up to five on a single C-Bus network
- Incorporates short circuit and reverse polarity protection
- Indicates the line voltage status with a Unit LED
- Indicates the network status, including the network power and the presence of the C-Bus clock, with a C-Bus LED
- Standard built-in C-Bus network connectors: (2) RJ-45

CATALOG NUMBER	DESCRIPTION
SLC5500TPS	120Vac Power Supply
SLC5500HPS	277Vac Power Supply

# Square D® Powerlink® Device Power Supply

The Square D® Powerlink® Device Power Supply is used to distribute power on a C-Bus™ network. Placed at critical points on the network, device power supplies will provide the current necessary for operating a variety of passive Square D® Clipsal® devices.

A Powerlink Device Power Supply consists of a Clipsal 8M enclosure containing one or two 4M Clipsal Power Supplies.



Powerlink Device Power Supply

## TECHNICAL INFORMATION

Nominal Line Voltage	<b>Operates at 120 or 277Vac, ± 10%, with a frequency range from 50–60 Hz</b>
Maximum Line Current	<b>9.9 mA for 120V power supply 4.3 mA for 277V power supply</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to the line</b>
Current Output	<b>350 mA (single power supply unit) 700 mA (dual power supply unit)</b>
Dimensions	<b>12.57 in. (L) x 8.88 in. (W) x 3.8 in. (D) [319 mm (L) x 226 mm (W) x 97 mm (D)]</b>
Weight	<b>One power supply: 8.84 lb (4.01 kg) Two power supplies: 9.28 lb (4.21 kg)</b>
Operating Environment	<b>Temp.: 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508A Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 83

## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure with trim assembly
- Unit and C-Bus LEDs indicate the status of the line voltage and the network
- Sources up to 700 mA (dual power supplies) to the C-Bus network
- 120 or 277Vac models available
- UTP connection jumper included for dual supply

CATALOG NUMBER	DESCRIPTION
NFDP1120G3C	120V Powerlink Single Power Supply
NFDP2120G3C	120V Powerlink Dual Power Supply
NFDP1277G3C	277V Powerlink Single Power Supply
NFDP2277G3C	277V Powerlink Dual Power Supply

# Square D® Powerlink® Device Router

The Square D® Powerlink® Device Router allows the exchange of data between a Powerlink NF3000G3C controller and Square D® Clipsal® devices.

The bidirectional device router can receive data from Clipsal input devices and send the data to the Powerlink panel/network. It can also receive data such as a contact closure from the Powerlink input and send that data to a Clipsal output/network.

The device router consists of a Clipsal 8M enclosure containing a Clipsal PC Interface and a Clipsal Power Supply. Communication between the device router and the NF3000G3C controller is made with the included 50-foot serial cable.



Powerlink device router

## TECHNICAL INFORMATION

Nominal Line Voltage	<b>Operates at 120 or 277Vac, ± 10%, with a frequency range from 50–60 Hz</b>
Maximum Line Current	<b>9.9 mA for 120V device router 4.3 mA for 277V device router</b>
Electrical Isolation	<b>3.75 kV RMS from C-Bus to the line</b>
Current Output	<b>350 mA to the C-Bus network</b>
Status Indicators	<b>Unit and Unit/Comms: Line voltage, unit power, and data transmission C-Bus: Power levels and presence of C-Bus clock</b>
Serial Connection	<b>(1) 9-pin RS-232 D-type serial connector (2) RS-232 RJ-45 connectors</b>
C-Bus Connection	<b>(2) RJ-45 sockets for connection to the C-Bus network</b>
Data Cable	<b>50 ft serial</b>
Dimensions	<b>12.57 in. (L) x 8.88 in. (W) x 3.8 in. (D) [319 mm (L) x 226 mm (W) x 97 mm (D)]</b>
Weight	<b>9.1 lbs (4.13 kg)</b>
Operating Environment	<b>Temp.: 32° to 113°F (0° to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508A Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 83

## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure with trim assembly
- Unit, Unit/Comms, and C-Bus LEDs indicate the status of data transmission and power to the unit and the network
- System network clock for synchronizing communications data
- Network power source, supplying up to 350 mA
- 120 or 277Vac models available

CATALOG NUMBER	DESCRIPTION
NFDR120G3C	120V Powerlink Device Router
NFDR277G3C	277V Powerlink Device Router

# Square D® Clipsal® Pascal Automation Controller

Square D® Clipsal® Pascal Automation Controller (PAC) provides extended conditional and real-time event programming to C-Bus™ systems. The PAC supports a full range of programming commands including conditional logic, flow control, variables and scheduling.

Systems integrators will appreciate the built-in scheduling tools, scene tools, and wizards for creating basic logic programs. Full programming capabilities can be achieved utilizing the free-form script editor based off the PASCAL programming language.

The PAC directly connects to a wired C-Bus system. Programs are downloaded from a personal computer through a USB connection.



Pascal Automation Controller

## TECHNICAL INFORMATION

Clipsal C-Bus™ Supply Voltage	<b>15-36Vdc @ 32 mA Drawn from the C-Bus network</b>
RS-232 Supply Voltage	<b>24Vac @ 20 mA (power source not provided)</b>
Battery Backup Supply Voltage	<b>12Vdc @ 30 mA (power source not provided)</b>
Connections	<b>2 C-Bus RJ-45 sockets (in parallel), 2 RS-232 RJ-45 sockets, 1 USB type B socket, screw terminals for 12Vdc battery and 24Vac power</b>
C-Bus System Clock	<b>Software selectable</b>
Network Burden	<b>Software selectable</b>
Status Indicators	<b>Unit/Comms, C-Bus, Status and User</b>
Dimensions	<b>2.83 x 3.62 x 2.48 inches (72 x 92 x 63mm)</b>
Weight	<b>5.29 oz (150g)</b>
Mounting	<b>DIN 4M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) 10% - 95% RH, noncondensing</b>
Standards	<b>CSA 22.2 Spec 205 Signal Equipment</b>

\*For Diagram see technical section page 83

## PRODUCT FEATURES

- Conditional and real-time events programming for C-Bus.
- Connects directly to C-Bus network
- Powered from the C-Bus network
- USB port for connection to personal computer
- (2) RS-232 ports for third party device control
- Real time, astronomical and C-Bus system clock included with 24 hour internal capacitor backup and external 12Vdc battery terminals

## PROGRAMMING CAPABILITIES INCLUDING:

- Conditional logic (if, then, and, or, not, etc.)
- Flow Control (for, repeat, while)
- Variables (integer, real, Boolean, character, string)
- Control and monitoring of group addresses
- Control and monitoring of scenes

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus Toolkit Software

CATALOG NUMBER	DESCRIPTION
SLC5500PACA	Pascal Automation Controller



# Square D® Clipsal® Telephone Interface Unit

The C-Bus™ Telephone Interface offers a dial-in and dial-out functionality, permitting control and status monitoring for a C-Bus system. It also includes an audio output, so that C-Bus events can be audibly announced.

The Telephone Interface is programmed using a connection to a PC running special configuration software. The interface can also act as a C-Bus PC Interface. In this way C-Bus can be programmed and configured either locally or from a remote site using a data modem.

The Telephone Interface is suitable for connection to the telephone network using a RJ31X connection, in parallel, or by insertion into a local circuit.



Telephone Interface Unit

## TECHNICAL INFORMATION

C-Bus Supply Voltage	<b>15 36Vdc @ 18 mA Nominal</b>
DC Plug Pack	<b>12Vdc @ 300-500 mA, 2.1mm plug with Center pin +VE</b>
Audio Output	<b>Line output, 1 Vp-p (nominal) into 10K Ohms</b>
Control Functions	<b>Dial in and Dial out functionality, control and status monitoring for a C-Bus system. Audio output. Standard C-Bus PCI allowing remote dial in and operation as a PCI with modem connection for remote operation of installation software</b>
Status Indicators	<b>Green LED- Power Orange LED-RS232 Comms, Line Grab Unit Comms and C-Bus</b>
Start Up Time	<b>10 seconds nominal after Power Up</b>
Storage Temperature	<b>32° to 140°F (0° to 60°C)</b>
Operating Temperature Range	<b>32° to 113°F (0° to 45°C)</b>
Operating Humidity Range	<b>0° to 95% RH, noncondensing</b>
C-Bus Input Terminals	<b>RJ45 sockets</b>
Color	<b>White with Black lettering and markings</b>
Dimensions	<b>5.8 x 5.7 x 1.2 in. (146.5 x 145 x 30mm)</b>
Weight	<b>1.31 lbs. (580g)</b>
Mounting Centers	<b>3.2 in. (80mm)</b>
Standards	<b>UL916 Energy Management Equipment CSA 22.2 Spec. 205 Signal Equipment FCC Part 15.101, Class B Digital FCC Part 68 Connections of Terminal Equipment to the Telephone Network</b>

\*For Diagram see technical section page 84

## PRODUCT FEATURES

- Audio OUT
- Local or remote site access to C-Bus system
- 12Vdc power pack
- RS-232 connection
- 1 RJ45 patch lead
- 2 RJ12 patch leads
- Software available via website download

CATALOG NUMBER	DESCRIPTION
SLC5100TUS	Telephone Interface Unit

# Square D® Clipsal® General Input Unit

Square D® Clipsal® Four-Channel General Input Units are DIN-rail mounted devices that measure TTL digital and real-world analog quantities and generate messages about the measurements to the C-Bus™ network. By acting as an interface with various external sensors, the general input unit enables integration of the C-Bus network with a variety of system types, such as those for HVAC and for power monitoring.

Configuration options include selectable input types, eight adjustable decision thresholds per channel, definable actions, selectable filtering, broadcast rates, and a separate hysteresis value per channel.



General Input Unit

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36 volts @18 mA from the C-Bus network</b>
Nominal	<b>120Vac</b>
Nominal Supply Voltage	<b>16-27V AC/DC, +/- 10%, 50-60 Hz, provided by an external power supply (included)</b>
AC Input Impedance	<b>100 kOhm @ 1 kHz</b>
External Power Supply	<b>24Vac @ 500 mA</b>
Electrical Isolation	<b>500 V RMS per input</b>
Nominal 24Vdc Output Voltage	<b>24Vdc @ 250 mA, ±10% General Input</b>
Digital Sensor Input	<b>TTL, 5V from external source</b>
Analog Sensor Inputs:	
Voltage Ranges	<b>0-1, 0-5, 0-10, 0-20Vdc</b>
Input Current Ranges	<b>0-20 mA DC, 4-20 mA DC</b>
Resistance Ranges	<b>0-500 ohm, 0-1000 ohm, 0-3000 ohm, 0-10000 ohm</b>
Maximum Input Voltages	<b>-20 V to 60Vdc</b>
Input Voltage Range Impedance	<b>At least 100 kOhm</b>
Current Sense Impedance	<b>249 ohm</b>
Resistance Range Injection Current	<b>500 µA</b>
Basic Accuracy after Calibration	<b>0.5% of full scale</b>
Maximum Input Frequency	<b>10 Hz</b>
Broadcast Rates	<b>2-1024 sec</b>
Number of Units per Network	<b>10</b>
C-Bus Connections	<b>(2) RJ-45 connectors, CAT 5 UTP cable required</b>
Cable	<b>15.75 in. (400 mm) patch lead included</b>
Terminals	<b>Accommodate 16-12 AWG cable (2 x 1.31 mm<sup>2</sup> or 1 x 3.31 mm<sup>2</sup>)</b>
Status Indicators	<b>Unit/Comms: Unit power and data transmission C-Bus: Power levels and presence of C-Bus clock</b>
Dimensions	<b>5.7 in. (L) x 3.4 in. (W) x 2.6 in.(H) [144 mm (L) x 85 mm (W) x 65 mm (H)]</b>
Weight	<b>7 oz (190 g)</b>
Mounting	<b>DIN rail, 8M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital EN61000-4-2 Immunity to ESD UL Listed 916 Energy Management Equipment</b>

\*For Diagram see technical section page 84

## PRODUCT FEATURES

- Measures TTL digital quantities including voltage, current, or resistance from external sensors such as light level, pressure, and temperature
- Four channels of input, each with an adjustable hysteresis value, eight decision thresholds, and a software-selectable input value transformation in the form  $y = ax + b$
- Input channels are compatible with a range of third-party sensors
- Look-up table with interpolation
- Capable of threshold switching or broadcasting values onto the network
- Control functions include load switching, dimming, trigger applications, enable control applications, and measurement applications
- Measures input signals up to 10 Hz and has an adjustable input-signal filter to reduce susceptibility to impulse and noise
- Supplies 250 mA to external sensors
- LEDs indicate the status of the network at the unit and the unit's power and data transmissions
- Software-selectable network burden and C-Bus system clock
- Standard built-in C-Bus network connectors: (2) RJ-45
- Non-volatile memory stores operating status for recovery from a power outage
- Includes 120V/24V AC power pack

## DISTRIBUTED INTELLIGENCE

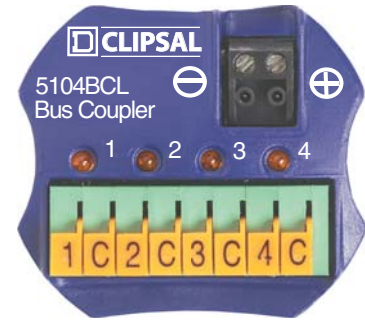
- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION
SLCE5504TGI	Four Channel General Input Unit

# Square D® Clipsal® Bus Coupler

Square D® Clipsal® Bus Couplers are non-isolated input devices that provide an interface between dry-contact mechanical switches and a C-Bus network. The bus coupler increases the versatility of the C-Bus network by facilitating remote access with any dry-contact switch mechanism offered by Schnieder Electric and other manufacturers. A system's flexibility can be further enhanced by using the bus coupler with various other switch types, including reed, pressure, or micro switches.

Available in two- and four-channel models, the bus coupler is small enough to be used in restricted spaces. Configuration options include standard control functions such as ON/OFF, toggle, dimmers, and timers.



Four-Channel Bus Coupler

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Electrical Isolation	<b>None</b>
Voltage Across Input	<b>External Switch Opens: 5Vdc External Switch Closes: 0Vdc</b>
Current—Switch Closed	<b>Less than 50 µA</b>
Distance Between Switch and Bus Coupler	<b>2-Channel Coupler: Up to 1 ft (0.3 m) each 4-Channel Coupler: Up to 3 ft (1 m) each</b>
LED Drive Output	<b>2-Channel Coupler only: 2 mA @ 12 V</b>
Maximum Input Voltages	<b>-20 to 60Vdc</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connections	<b>Two-way removable screw-type terminals accommodating 24–16 AWG cable (0.2–1.31 mm<sup>2</sup>)</b>
Channel Input Connections	<b>Spring-loaded terminal block accommodating 24–12 AWG cable (0.2–3.31 mm<sup>2</sup>)</b>
Status Indicators	<b>Channel (2 or 4)</b>
Timers	<b>1 sec–18 hr, 1 sec intervals</b>
Dimensions	<b>2.2 in. (L) x 1.9 in. (W) x 0.7 in. (H) [55 mm (L) x 49 mm (W) x 18 mm (H)]</b>
Weight	<b>1.1 oz (32 g)</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital, EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 84

## PRODUCT FEATURES

- Provides two or four non-isolated inputs for external voltage-free mechanical switches. Two-channel units feature independent remote LED outputs
- Control options include ON/OFF, toggle, dimmer, or timer
- Orange LED for each channel to indicate operational status
- Two-way removable terminal block for the C-Bus connection
- Terminal block allows connection of up to four external switches (four-channel coupler) or two external switches and two external LEDs (two-channel coupler)
- Small size for adaptation to restricted spaces
- Non-volatile memory stores operating status for recovery from a power outage
- Receives data and power over a network, so it does not require power packs or line voltage connections

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION
<b>SLC5102BCL</b>	Two-Channel Bus Coupler
<b>SLC5104BCL</b>	Four-Channel Bus Coupler

# Square D® Clipsal® Four-Channel Auxiliary Input

Square D® Clipsal® Four-Channel Auxiliary Inputs are isolated four-channel input units that provide an interface between voltage-free mechanical switches and a C-Bus™ network. An auxiliary unit increases the versatility of the C-Bus network by facilitating remote access with any dry-contact switch mechanism offered by Schneider Electric or other manufacturers.

DIN-rail mounted for quick installation, the auxiliary unit can be configured with standard C-Bus control functions such as remote scene triggering, ON/OFF, toggle, dimmer, or timer.



Four-Channel Auxiliary Input unit

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Electrical Isolation	<b>C-Bus/Remote Input: 500 V RMS Remote Input: 500 V RMS</b>
Voltage Across Input	<b>External Switch Opens: 5Vdc External Switch Closes: 0Vdc</b>
Current—Switch Closed	<b>0.4 mA</b>
Switch Resistance	<b>Up to 1000 ohm, including cable resistance (26.5 ohms per km resistance for #18 copper wire coated DC current resistance)</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connections	<b>(2) RJ-45 connectors, CAT 5 UTP cable required</b>
Cable	<b>15.75 in. (400 mm) patch lead included</b>
Terminals	<b>Accommodate one 12 or two 14-22 AWG cables (1 x 3.1 mm<sup>2</sup>) or 2 x 2.0-0.3 mm<sup>2</sup>]</b>
Status Indicators	<b>Channel: (4) orange LEDs to indicate the load status for each channel</b>
Timers	<b>1 sec–18 hr, 1 sec intervals</b>
Dimensions	<b>3.4 in. (L) x 2.8 in. (W) x 2.6 in.(H) [85 mm (L) x 72 mm (W) x 65 mm (H)]</b>
Weight	<b>4.6 oz (130 g)</b>
Mounting	<b>DIN rail, 4M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 85

## PRODUCT FEATURES

- Provides four isolated inputs for external voltage-free mechanical switches
- Control options include remote scene triggering, ON/OFF, toggle, dimmer, or timer operations
- Orange LEDs indicate operational status, one for each channel
- Standard built-in C-Bus network connectors: (2) RJ-45
- Non-volatile memory stores operating status for recovery from a power outage

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION
SLCLE5504AUX	Four-Channel Auxiliary Input Unit

# Square D® Clipsal® Indoor PIR Occupancy Sensor

The Square D® Clipsal® Indoor PIR Occupancy Sensor provides reliable thermal-radiation-based control of lighting and other C-Bus output devices.

Suitable for wall or ceiling mounting, this sensor offers a continuous detection field of 400 square feet and a 90° field of view. The entire detection field has uniform sensitivity and no dead zones, making it an ideal lighting-control solution for offices, corridors, and conference rooms.

Configuration options include an adjustable light-level sensor that can be set to automatically turn off lights when ambient light levels are sufficient or turn on lights when ambient light levels are insufficient.



Indoor PIR Occupancy Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Field of View	<b>90°</b>
PIR Detection Field	<b>Typically 400 sq ft (37 sq m)</b>
Light-Level inhibit Threshold	<b>0.1 footcandle (1 lux) to full sunlight</b>
Timer Delay Range	<b>0 sec-18 hr, 1 sec interval</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connection	<b>Screw-type terminals, input terminals accommodate 24-16 AWG cable (0.2-1.31 mm<sup>2</sup>)</b>
Status Indicators	<b>LED can be configured to turn on when movement is detected</b>
Dimensions	<b>3.9 in. (W) x 2.2 in. (H) [100 mm (W) x 57 mm (H)]</b>
Weight	<b>4.4 oz (125 g)</b>
Mounting	<b>Surface: Ceiling or wall Ht: 8 ft (2.4 m) above floor</b>
Operating Environment	<b>Indoor 32°F to 122°F (0°C to 50°C)</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 85

## PRODUCT FEATURES

- Indoor use, wall or ceiling-mounted unit with a 90° field of view and a detection area of 400 square feet
- LED can be configured to indicate motion detection
- Light-level sensor has Sunrise/Sunset settings, clock overrides, and adjustable sensitivity ranging from 0.1 foot candle to full sunlight
- Advanced circuitry to help prevent false triggering, including electrostatic and electromagnetic shields, dual element detectors, pyroelectric ceramic sensors, and an optical band pass filter
- Controls up to four C-Bus group addresses that can be individually scheduled
- Non-volatile memory stores operating status for recovery from a power outage
- Receives data and power over a network, so the sensor does not require power packs or line voltage connections

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION
SLC5751L	90° Indoor PIR Occupancy Sensor

# Square D® Clipsal® 360° PIR Occupancy Sensor

The Square D® Clipsal® 360° Indoor PIR Occupancy Sensor combines a passive infrared receiver (PIR) for occupancy sensing and a light-level sensor into a small, highly versatile unit. The multi-sensor's 2.8 inch face diameter makes it unobtrusive and ideally suited for flush mounting on the ceiling.

This sensor has a 360 degree field of view with an effective coverage pattern of more than 800 feet, so it is ideally suited for offices, copier rooms, closets, and restrooms. Multiple sensors can be connected to the same C-Bus network to provide larger coverage patterns.

Configuration options include adjustable time delays for automatic shut-off following a preset time period without detected motion and an adjustable light-level sensor that can be set to automatically turn off lights when ambient light levels are sufficient or turn on lights when ambient light levels are insufficient.



360° PIR Occupancy Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Field of View	<b>360°</b>
PIR Rated Detection Field	<b>Typically 800 sq ft (74 sq m) when sensor is mounted 8 ft (2.4 m) above floor</b>
Light-Level inhibit Threshold	<b>0.1 footcandle (1 lux) to full sunlight</b>
Timer Delay	<b>0 sec to 18 hr</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connection	<b>Two removable terminal blocks, requires CAT 5 data cable</b>
Status Indicators	<b>LED can be configured to turn on when movement is detected</b>
Dimensions	<b>4.1 in. (L) x 2.8 in. (W) [103 mm (L) x 72 mm (W)]</b>
Weight	<b>4.4 oz (125 g)</b>
Mounting	<b>Surface: Ceiling Ht: 8 ft (2.4 m) above floor Max. Ht: 12 ft (3.7 m) above floor Min. Ceiling Thickness: 0.4 - 0.75 in. (10 - 19.1 mm)</b>
Operating Environment	<b>Indoor only 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 85

## PRODUCT FEATURES

- 360° detection pattern, indoor use
- Effective coverage area is more than 800 square feet when unit is mounted 8 feet above the floor
- Dual element detectors minimize false triggering
- LEDs indicate movement detection and status of the IR receiver, and the light-level sensor
- Can control up to four scenes or group addresses that can be individually scheduled
- Adjustable light-level sensor with Sunrise/Sunset and clock overrides
- Attractive, low profile unit can be flush mounted on ceiling or suspended from wall tiles where it is unobtrusive, with a face diameter of only 2.8 inches
- Non-volatile memory stores operating status for recovery from a power outage
- Receives data and power over a network. No power packs or line voltage connections required

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION
SLC5753L	360° PIR Occupancy Sensor

# Square D® Clipsal® 360° PIR Multi-Sensor

The Square D® Clipsal® 360° PIR Multi-Sensor combines a passive infrared receiver (PIR) for occupancy sensing, a light-level sensor, and an infrared remote receiver into a small, highly versatile unit. The sensor's 2.8 inch face diameter makes it unobtrusive and ideally suited for flush mounting on the ceiling.

Configuration options for the occupancy sensor include adjustable time delays for automatic shut-off following a preset time period without detected motion and an adjustable light-level sensor to turn on lights automatically when ambient light levels are low or turn off lights when ambient light levels are sufficient. The built-in IR receiver accepts commands from an optional handheld remote controller, making the sensor ideal for classrooms and conference room areas.



360° PIR Multi-Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Field of View	<b>360°</b>
PIR Rated Detection Field	<b>Typically 800 sq ft (74 sq m) when sensor is mounted 8 ft (2.4 m) above floor</b>
IR Receiver Rated Detection Field	<b>Typically 800 sq ft (74 sq m) when sensor is mounted 8 ft (2.4 m) above floor</b>
Light-Level inhibit Threshold	<b>0.1 footcandle (1 lux) to full sunlight</b>
Timer Delay	<b>0 sec to 18 hr</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connection	<b>Two removable terminal blocks, requires CAT 5 data cable</b>
Status Indicators	<b>PIR Sensor or IR Receiver (activity) PIR Sensor (enabled/disabled) Light Level Maint. (enabled/disabled)</b>
Dimensions	<b>4.1 in. (L) x 2.8 in. (W) [103 mm (L) x 72 mm (W)]</b>
Weight	<b>4.4 oz (125 g)</b>
Mounting	<b>Surface: Ceiling Ht: 8 ft (2.4 m) above floor Max. Ht: 12 ft (3.7 m) above floor Min. Ceiling Thickness: 0.4 - 0.75 in. (10 - 19.1 mm)</b>
Operating Environment	<b>Indoor only 32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 86

## PRODUCT FEATURES

- 360° detection pattern, indoor use
- Effective detection area of occupancy sensor is more than 800 square feet when unit is mounted 8 feet above the floor. Effective IR coverage is 800 square feet.
- Dual element detectors minimize false triggering
- LEDs indicate movement detection and status of the IR receiver, the occupancy sensor, and the light-level sensor
- Can control up to eight C-Bus scenes or directly control up to eight C-Bus group addresses that can be individually scheduled
- Adjustable light-level sensor has Sunrise/Sunset and clock overrides
- Attractive, low profile unit can be flush mounted on ceiling or suspended from wall tiles where it is unobtrusive, with a face diameter of only 2.8 inches
- Optional handheld remote controller (SLC5084TX, SLC5088TX)
- Non-volatile memory stores operating status for recovery from a power outage
- Receives data and power over a network, so the sensor does not require power packs or line voltage connections

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION	ACCESSORIES
SLC5753PEIRL	360° PIR Multi-Sensor	SLC5084TX IR 4-Button Remote Controller (ordered separately) SLC5088TX IR 8-Button Remote Controller (ordered separately)

# Square D® Clipsal® Outdoor Motion Sensor

The Square D® Clipsal® Outdoor PIR Motion Sensor combines reliable thermal-radiation-based control of lighting with rugged construction suitable for outdoor requirements. The unit's advanced circuits and flat multi-segmented lens provide coverage of up to 3000 square feet in a 110° field of view.

The detection area incorporates a multi-faceted lens, which ensures fast response to motion and few dead zones. Electrostatic and electromagnetic shields, dual element detectors, an optical bandpass filter, and pyroelectric ceramic sensors are used to reduce the incidence of false triggering.

Configuration options include an adjustable light-level sensor that can be set to automatically turn off lights when ambient light levels are sufficient or turn on lights when ambient light levels are insufficient.



Outdoor PIR Motion Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Field of View	<b>110°</b>
PIR Detection Field	<b>Typically 3000 sq ft (279 sq m)</b>
Light-Level inhibit Threshold	<b>0.1 footcandle (1 lux) to full sunlight</b>
Number of Detection Zones	<b>18 Long Range, 16 Intermediate Range, 10 Short Range, 4 ultra Short</b>
Timer Delay Range	<b>0 sec to 18 hr</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connection	<b>One terminal block</b>
Status Indicators	<b>LED can be configured to turn on when movement is detected</b>
Dimensions	<b>4.5 in. (L) x 2.9 in. (W) x 5.5 in. (D) [114 mm (L) x 74 mm (W) x 140 mm (D)]</b>
Weight	<b>8 oz (227 g)</b>
Mounting	<b>Standard plate/box with 3.3 in. (84 mm) mounting centers Surface: Ceiling or wall Ht: 8 ft (2.4 m) above floor</b>
Operating Environment	<b>Outdoor only 32°F to +122°F (0°C to +50°C)</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 86

## PRODUCT FEATURES

- Outdoor use, wall or ceiling-mounted unit with a 110° field of view and a detection area up to 3000 square feet in diameter
- Lens has 12 overlapping zones on each of 4 levels, forming a continuous detection field
- Rugged construction and pre-wired flexible cord
- LED indicates motion detection
- Light-level sensor has Sunrise/Sunset settings, clock overrides, and adjustable sensitivity ranging from 0.1 footcandle to full sunlight
- Controls up to four C-Bus group addresses that can be individually scheduled
- Non-volatile memory stores operating status for recovery from a power outage
- Receives data and power over a network, so the sensor does not require power packs or line voltage connections

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit Software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION
SLC5750WPL	110° Outdoor PIR Motion Sensor



# Square D® Clipsal® Light-Level Sensor

The Square D® Clipsal® Light-Level Sensor measures ambient light levels and automatically issues ON, OFF, or ramp commands over a C-Bus network. The light-level sensor can control relays, dimmers, or remotely operated circuit breakers, changing their status according to pre-set ambient lighting levels.

The Clipsal light-level sensor has a dynamic range between 5-150 footcandles, and compensates for noise and rapid light intensity fluctuations by using filtering and hysteresis.

The light-level sensor can control up to two C-Bus group addresses: one address controls the switching ON/OFF of a lamp circuit according to the amount of ambient light, while the other is used to continuously regulate the light-level output of any number of lamps.



Light Level Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 18 mA, drawn from the C-Bus network</b>
Light Level	<b>Reads: 2-278 footcandles (20-3000 lux) Controls: 5-148 footcandles (40-1600 lux)</b>
Field of View	<b>180°</b>
C-Bus Connection	<b>Accommodates 6 x 24 AWG cable (6 x 0.2 mm<sup>2</sup>)</b>
Status Indicators	<b>Can be configured to report state of any one of three group addresses: Enabled, ON/OFF, or Ramp</b>
Dimensions	<b>4.57 in. (L) x 2.99 in. (W) x 1.93 in. (D) [116 mm (L) x 76 mm (W) x 49 mm (D)]</b>
Weight	<b>3 oz (85 g)</b>
Operating Environment	<b>Indoor only 32°F to 122°F (0°C to 50°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 86

## PRODUCT FEATURES

- Can maintain constant illumination levels of 5-150 footcandles
- Controls up to two C-Bus group addresses, one set for ON/OFF operations and one set for ramping operations
- 180° field of view
- Can be enabled or disabled over the C-Bus network
- Stores operating status in non-volatile memory for recovery from a power outage
- Receives data and power over a single C-Bus twisted pair cable
- Verifies status of input and output devices on same C-Bus application address, updating input status if necessary
- LED can be configured to indicate current status of any C-Bus group address
- Attractive, wall-mounted, low-profile unit

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Powerlink® NF3000G3C controller
- Easily configured by using the C-Bus™ Toolkit Software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION
SLC5031PE	Light-Level Sensor

# Square D® Clipsal® Outdoor Light-Level Sensor

The Square D® Clipsal® light-level sensor measures ambient light levels and automatically issues ON/OFF or ramp commands over a C-Bus™ network to maintain outdoor lighting levels. Primarily designed for outdoor use, this light-level sensor is also suitable for indoor settings in which a water resistant casing is desirable.



Outdoor Light Level Sensor

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15–36Vdc @ 18 mA, drawn from the C-Bus network</b>
Field of View	<b>180°</b>
Light-Level Range	<b>Reads: 2-278 footcandles (20-3000 lux) Controls: 5-148 footcandles (40-1600 lux)</b>
C-Bus Connection	<b>Screw-type input terminals accommodate 6 x 24 AWG cable (6 x 0.2 mm<sup>2</sup>) Connection requires CAT 5 data cable</b>
Max. Units/Network	<b>Based on the total network current load and available power</b>
Conduit Openings	<b>Sized for 20 mm and 25 mm conduit fittings</b>
Dimensions	<b>4 in. (L) x 4 in. (W) x 2.5 in. (D) [102 mm (L) x 102 mm (W) x 65 mm (D)]</b>
Weight	<b>10.8 oz (305 g)</b>
Mounting	<b>Indoor or outdoor, wall or ceiling Indoor Height: At least 6.5 ft (1.9 m) above floor</b>
Operating Environment	<b>Outdoor or indoor –22°F to 122°F (–30°C to 50°C) RH: 95%, noncondensing</b>
Standards	<b>FCC: Part 15.101, Class B Digital Device</b>

\*For Diagram see technical section page 87

## PRODUCT FEATURES

- Outdoor use, wall- and ceiling-mounted low-profile unit
- Can maintain a constant illumination level of 5–150 footcandles
- Control of up to two C-Bus group addresses
- Sensors receive data and power over a single C-Bus twisted-pair cable, so they do not require power packs or line-voltage connections
- 180° field of view

CATALOG NUMBER	DESCRIPTION
SLC5031PEWP	Outdoor Light-Level Sensor

# Square D® Clipsal® Professional Series Dimmer

Square D® Clipsal® Professional Dimmers are designed to control incandescent and compatible low-voltage lighting. These dimmers are ideal for tight space applications where traditional rack mounted assemblies are not practical.

Professional dimmer units are available in 5 A (4 channels), 10 A (two channels), and 20 A (one channel) models. Each channel provides independent dimming and incorporates thermal overload and over-current protection. These dimmer units automatically compensate for voltage and frequency fluctuations and employ advanced phase-control techniques to reduce flicker and increase lamp life.

The aluminum enclosure acts as a heat sink and is designed for easy wall mounting, including keyhole mounts and removable terminals for the C-Bus and override connections. An optional terminal box is available for conduit connections.

Configuration options include network monitoring of the channel load and network voltages, adjustable delays for dimming levels, and master override.



10A, 2-Channel Professional Dimmer Unit

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>C-Bus voltage 15–36Vdc</b>
Nominal Line Supply Voltage and Frequency	<b>110–120Vac, ±10%, 50/60 Hz</b>
Useable Output Current	<b>60 mA</b>
Frequency Drift	<b>3 Hz per minute, maximum</b>
Frequency Step Change	<b>0.1 Hz (maximum)</b>
Minimum Load	<b>100 W per channel</b>
Current Sensing	<b>5–100% of full-rated load, 5% accuracy</b>
Efficiency	<b>98%</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connections	<b>Four-way removable screw terminals, CAT 5 UTP cable required</b>
Load Terminals	<b>Accommodates one #12 or up to two #14 AWG cable [(3.31 mm<sup>2</sup> - 1.3 mm<sup>2</sup>)]</b>
Auxiliary Contacts	<b>2.5 A @ 120Vac, normally open, voltage free, resistive</b>
Status Indicators	<b>Channel, Unit and C-Bus</b>
Dimensions	<b>9.45 in. (L) x 7.95 in. (W) x 2.95 in. (H) [240 mm (L) x 202 mm (W) x 75 mm (H)]</b>
Weight	<b>4.85 lb (2.2 kg)</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL508 Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 87

## PRODUCT FEATURES

- Suitable for use with resistive and inductive loads and low-voltage lamps utilizing iron core or electronic transformers
- Quick-mounting design, including keyhole mounts, front and rear cable access, and removable terminals for C-Bus connections
- Specialized dimming modes—soft turn on/off and linearized brightness control
- Built-in power supply sources 60 mA to the C-Bus network
- Compensates for fluctuations in frequency and voltage of power source
- Monitors load current by channel
- Integral thermal overload protection on each channel
- Individual channels can be turned On/Off at the unit or via C-Bus commands
- LEDs indicate the status of the network at the unit and the status of the unit's load and power
- Optional terminal box for connecting conduit
- Non-volatile memory stores operating status for recovery from a power outage

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION	ACCESSORIES	DESCRIPTION
SLC5104TD5	Professional Dimmer 5A, 4 Channel, 120Vac	SLCU5100TB	Terminal Box
SLC5102TD10	Professional Dimmer 10A, 2 Channel, 120Vac		
SLC5101TD20	Professional Dimmer 20A, 1 Channel 120Vac		

# Square D® Clipsal® Phase Angle Dimmers

Square D® Clipsal® Phase Angle Dimmers are C-Bus controlled output units suitable for incandescent and compatible low-voltage lighting. These units are designed to be rack mounted in suitable DIN style enclosures.

Each of the unit's channels can independently control loads to create dynamic lighting scenes. These dimmer units automatically compensate for voltage and frequency fluctuations and employ advanced phase-control techniques to reduce flicker and increase lamp life.



Phase Angle Dimmer Unit with Power Supply

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15–36Vdc @ 18 mA from the C-Bus network when there is no external power source</b>
Nominal Line Supply Voltage and Frequency	<b>110 - 120Vac, ±10%, 50–60 Hz</b>
C-Bus Source Current	<b>200 mA (Models: SLC5508TD2A, SLC5504TD4A)</b>
Load Rating per Channel	<b>2A (SLC5508TD2A), 4A (SLC5504TD4A)</b>
Minimum Load	<b>15 W per channel</b>
Efficiency	<b>98%</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connections	<b>(2) RJ-45 connectors, CAT 5 UTP cable required</b>
Cable	<b>15.75 in. (400 mm) patch lead included</b>
Remote Override Connection	<b>RJ-45 connector</b>
Power Terminals	<b>Accommodate 16–12 AWG cable</b>
Load Terminals	<b>[2 x #16 guage (2 x 1.31 mm<sup>2</sup>) or 1 x #14 guage (1 x 2.08 mm<sup>2</sup>)]</b>
Status Indicators	<b>Channel: (1) per channel Unit (1): Unit power C-Bus (1): Power levels and presence of C-Bus clock</b>
Dimensions	<b>8.5 in. (L) x 3.6 in. (W) x 2.5 in.(H) [216 mm (L) x 92 mm (W) x 63 mm (H)]</b>
Weight	<b>23 oz (647 g)</b>
Mounting	<b>DIN rail, 12M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL508 Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 87

## PRODUCT FEATURES

- Suitable for use with incandescent lamps and low-voltage lamps utilizing iron core or electronic transformers
- Specialized dimming modes - soft turn On/Off and linearized brightness control.
- Can supply up to 200 mA to the C-Bus network (models SLC5504TD4A and SLC5508TD2A with built-in power supply)
- Integral thermal overload protection on each channel
- Individual channels can be turned ON/OFF at unit or via C-Bus commands
- LEDs indicate the status of the network at the unit, the status of the unit's load and power, and the status of each channel
- Non-volatile memory stores operating status for recovery from a power outage

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION
SLC5504TD4A	Four-Channel 4A Dimmer, with power supply
SLC5504TD4AP	Four-Channel 4A Dimmer, without power supply
SLC5508TD2A	Eight-Channel 2A Dimmer, with power supply
SLC5508TD2AP	Eight-Channel 2A Dimmer, without power supply

# Square D® Clipsal® 2 Channel DALI Gateway

The Square D® Clipsal® Digital Addressable Lighting Interface (DALI) Gateway provides an isolated two-way communications path between a C-Bus network and two DALI networks, making it possible to use the C-Bus network to control and monitor DALI ballasts.

The DALI gateway constantly monitors both DALI networks and can detect and report faulty lamps in fluorescent ballasts or non-functional DALI ballasts.



DALI Gateway

## TECHNICAL INFORMATION

Nominal Voltage Requirements	<b>15-36Vdc @ 32 mA, drawn from the C-Bus network</b>
Electrical Isolation	<b>3.75 kV RMS, from interface to C-Bus network</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
C-Bus Connections	<b>Built-in RJ-45 sockets (2) for connection to the C-Bus network</b>
DALI Connections	<b>Two screw-type terminal blocks accommodating 16–12 AWG cable (2 x 1.31 mm<sup>2</sup> or 1 x 2.5 mm<sup>2</sup>)</b>
Cable	<b>(1) 15.75 in. (400 mm) patch lead included</b>
Status Indicators	<b>Unit/Comms: Unit power and data transmission C-Bus: Power levels and presence of C-Bus clock</b>
Dimensions	<b>3.4 in. (L) x 2.8 in. (W) x 2.6 in.(H) [85 mm (L) x 72 mm (W) x 65 mm (H)]</b>
Weight	<b>4.6 oz (130 g)</b>
Mounting	<b>DIN rail, 4M wide</b>
Operating Environment	<b>32°F to 113°F (0 °C to 45 °C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 88

## PRODUCT FEATURES

- Provides two-way communications between C-Bus and DALI networks, routing selected messages from one to the other
- Unit is transparent and invisible to DALI ballasts
- Pre-programmed C-Bus to DALI and DALI to C-Bus addressing structure
- Unit/Comms and C-Bus LEDs show the status of data transmissions, the unit's power, the C-Bus network's power, and the presence of the C-Bus clock
- Software-selectable network burden and network clock
- Standard built-in C-Bus network connectors: (2) RJ-45
- Non-volatile memory to store operating status for recovery from a power outage
- Receives data and power over the network, so the unit does not require power packs or line-voltage connections

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- C-Bus side of interface is easily configured with the C-Bus™ Toolkit Software

CATALOG NUMBER	DESCRIPTION
SLC5502DAL	Two-Channel DALI Gateway

# Square D® Clipsal® 4 Channel 0-10V Fluorescent Ballast Dimmer

The Square D® Clipsal® 4 Channel 0-10V Fluorescent Ballast Dimmer provides four channels of analog 0-10Vdc that can be used as the control signals for various peripheral devices, including electronically dimmable fluorescent lighting ballasts.

This analog output unit can sink or source current as appropriate for the connected load, and produces 0-10 V in response to commands from the C-Bus network.

Each channel can be individually turned ON or OFF at the unit or by C-Bus commands, and each can drive multiple loads. All channels also can be turned ON or OFF remotely without C-Bus network communication.



4 channel 0-10V Fluorescent Ballast Dimmer

## TECHNICAL INFORMATION

Power Requirements	<b>C-Bus: 15–36Vdc @ 22 mA required for normal operation. Power: 120V or 277Vac connection, 10 W</b>
Number of Units per Network	<b>Use the C-Bus Calculator, a software utility, to determine the total network current load</b>
Electrical Isolation	<b>3.5 kV RMS from C-Bus to the line</b>
Output Voltage Range	<b>0-10Vdc (±0.5)</b>
Output Rating	<b>Sourcing: 2.5 mA (minimum of 4 kohm) Sinking: 15 mA at <math>V_{out} = 0V</math> 8 mA at <math>V_{out} = 10V</math> [i.e., <math>I = 15 - (0.7 \times V_{out})mA</math>]</b>
Status Indicators	<b>Unit: Unit power C-Bus: Network voltage level and presence of system clock</b>
C-Bus Connection	<b>(2) RJ-45 terminals</b>
Cable	<b>(1) 15.75 in. (400 mm) CAT 5 patch lead with pre-terminated RJ-45 connectors</b>
Output Terminals	<b>Accommodates 2 X 16 AWG or 1 X 12 AWG cable (2 x 1.3 mm<sup>2</sup> or 1 x 3.3 mm<sup>2</sup>)</b>
Mounting	<b>DIN rail, 4M wide</b>
Dimensions	<b>3.35 in. (L) x 2.83 in. (W) x 2.56 in. (D) [85 mm (L) x 72 mm (W) x 65 mm (D)]</b>
Weight	<b>8.64 oz (245 g)</b>
Operating Environment	<b>32°F to 122°F (0°C to 50°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 916 Energy Management Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 88

## PRODUCT FEATURES

- Produces four independently controllable channels of 0-10Vdc for controlling dimmable lighting ballasts or other loads
- Each channel can sink or source current and drive multiple loads
- Two RJ-45 connectors facilitate quick connections to the C-Bus network and between similar units
- Individual channels can be turned ON/OFF at unit, via C-Bus commands, and through a remote override option
- Unit and C-Bus LEDs show the status of the unit and the network
- Non-volatile memory stores operating status for recovery from a power outage
- 120 or 277Vac models available

## DISTRIBUTED INTELLIGENCE

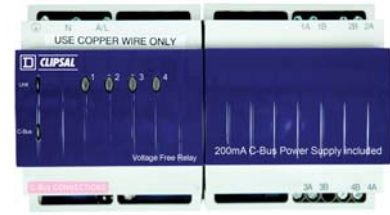
- Compatible with all Clipsal devices and the Powerlink® NF3000G3C controller
- Easily configured by using Learn Mode or the C-Bus™ Toolkit software and a personal computer connected to the C-Bus network

CATALOG NUMBER	DESCRIPTION
SLCLE5504TAMP	Analog Output Unit, 0-10V, 120V
SLCLE5504HAMP	Analog Output Unit, 0-10V, 277V

# Square D® Clipsal® 10 Amp Relay Unit

Square D® Clipsal® Relays are DIN-rail mounted units with four or twelve independent, voltage free, relay contacts for general switching applications. They are suitable for use with resistive, inductive, incandescent and fluorescent loads.

Each channel is independently configurable and features a zero crossing magnetically latching relay designed for switching the harsh electrical loads associated with today's high efficiency lighting systems. Local toggle buttons are provided on each unit to allow individual channels to be toggled at each unit or via Clipsal C-Bus™ network commands. Remote ON and OFF facilities are available, permitting all channels to be turned ON or OFF without C-Bus Network communications.



4 Channel 10 Amp Relay

## TECHNICAL INFORMATION

Nominal Supply Voltage	<b>110-120V</b> (SLC5504TRVF, SLC5504TRVFP, SLC5512TRVF and SLC5512TRVFP) <b>277V</b> (SLC5504HRVF, SLC5504HRVFP, SLC5512HRVF and SLC5512HRVFP)
Frequency Range(s)	<b>50 - 60Hz</b>
Clipsal C-Bus Supply Voltage	<b>15-36Vdc @ 18 mA required for programming when electrical power source is not connected</b>  <b>Sources 200 mA to the C-Bus Network with electrical power source connected (non-power supply versions)</b>  <b>15-36Vdc @ 0 mA is required for programming when electrical power source is connected</b>
Electrical isolation	<b>3.75 kV RMS from C-Bus to power source</b>
Contact Type	<b>Voltage Free, magnetically latched</b>
C-Bus Connections	<b>2 RJ-45 connectors, CAT 5 UTP cable req.</b>
Electrical Terminals	<b>Accommodates (1) #12 or up to (2) #14 - 16 AWG (3.31mm<sup>2</sup> - (2) x 2.08 - 1.31mm<sup>2</sup>)</b>
Status Indicators	<b>C-Bus Indicator Unit Status Indicator Load Indicator</b>
Dimensions	<b>4 Channel - 5.67 x 3.35 x 2.56 inches (144 x 85 x 65mm) 12 Channel - 8.46 x 3.35 x 2.56 inches (215 x 85 x 65mm)</b>
Weight	<b>4 Channel - 14 oz (400g) (w/o Power Supply) 18 oz (510g) (w/Power Supply) 12 Channel - 21 oz (600g) (w/o Power Supply) 28 oz (800g) (w/Power Supply)</b>
Mounting	<b>DIN rail, 4 Channel - 8M wide 12 Channel - 12M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508 Industrial Control Equipment CSA 22.2 No. 14 Industrial Control Equipment FCC: Part 15, Class B Digital Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 88

## PRODUCT FEATURES

- Four or twelve independently operating voltage free relay contacts
- Two convenient built-in C-Bus network connectors (RJ-45)
- Units available both with and without a 200 mA power supply
- Non-volatile memory stores operating status for recovery from power outage
- LED Indicators show the status of the network and the unit
- Load Rating (4 and 12 channel 10 Amp rated relay)  
Resistive-10A  
Inductive-10A  
Fluorescent -10A  
Motor -2A

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus Toolkit Software

CATALOG NUMBER	DESCRIPTION
<b>SLC5504TRVF</b>	4 Channel, 120V, 10A w/power supply
<b>SLC5504TRVFP</b>	4 Channel, 120V, 10A w/o power supply
<b>SLC5504HRVF</b>	4 Channel, 277V, 10A w/ power supply
<b>SLC5504HRVFP</b>	4 Channel, 277V, 10A w/o power supply
<b>SLC5512TRVF</b>	12 Channel, 120V, 10A w/power supply
<b>SLC5512TRVFP</b>	12 Channel, 120V, 10A w/o power supply
<b>SLC5512HRVF</b>	12 Channel, 277V, 10A w/power supply
<b>SLC5512HRVFP</b>	12 Channel, 277V, 10A w/o power supply

# Square D® Clipsal® 20 Amp Relay Units

Square D® Clipsal® 20 Amp Relays are DIN-rail mounted units with four independent, voltage free, relay contacts. They are suitable for use with resistive, inductive, incandescent and fluorescent loads.

Each channel is independently configureable and features a zero crossing magnetically latching relay designed for switching the harsh electrical loads associated with today's high efficiency lighting systems. Local toggle buttons are provided on each unit to allow individual channels to be toggled at each unit or via Clipsal C-Bus™ network commands. Remote ON and OFF facilities are available, permitting all channels to be turned ON or OFF without C-Bus Network communications.



4 Channel 20A Relay

## TECHNICAL INFORMATION

Nominal Supply Voltage	<b>110-120V</b> (SLC5504TRVF20 and SLC5504TRVF20P) <b>277V</b> (SLC5504HRVF20 and SLC5504HRVF20P)
Frequency Range(s)	<b>50 - 60Hz</b>
Clipsal C-Bus Supply Voltage	<b>15-36Vdc @ 18 mA required for programming when electrical power source is not connected.</b>  <b>Sources 200 mA to the C-Bus Network with electrical power source connected.</b>
Electrical isolation	<b>3.75 kV RMS from C-Bus to power source</b>
Contact Type	<b>Voltage Free, magnetically latched</b>
C-Bus Connections	<b>2 RJ-45 connectors, CAT 5 UTP cable req.</b>
Electrical Terminals	<b>Accommodates (1) #12 or up to (2) #14 - 16 AWG (2 x 1.3 mm<sup>2</sup> or 1 x 3.3 mm<sup>2</sup>)</b>
Status Indicators	<b>C-Bus Indicator Unit Status Indicator Load Indicator</b>
Dimensions	<b>8.46 x 3.35 x 2.56 inches (215 x 85 x 65mm)</b>
Weight	<b>20.46 oz (580g)</b>
Mounting	<b>DIN rail, 12M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL508 Industrial Control Equipment CSA 22.2 Spec 205 Signal Equipment FCC: Part 15.101, Class B Digital Device EN61000-3-2 Low Frequency Emissions</b>

\*For Diagram see technical section page 89

## PRODUCT FEATURES

- Four independently operating voltage free relay contacts
- Two convenient built-in C-Bus network connectors (RJ-45)
- Units available both with and without a 200mA power supply
- Non-volatile memory stores operating status for recovery from power outage
- LED Indicators show the status of the network and the unit
- Remote ON/OFF override capabilities
- Load Rating (4 channel 20 Amp rated relay)  
Resistive 20A  
Inductive 20A  
Fluorescent 20A  
Motor 4A

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus Toolkit Software

CATALOG NUMBER	DESCRIPTION
<b>SLC5504TRVF20</b>	4 Channel, 120V, 20A with power supply
<b>SLC5504TRVF20P</b>	4 Channel, 120V, 20A without power supply
<b>SLC5504HRVF20</b>	4 Channel, 277V, 20A with power supply
<b>SLC5504HRVF20P</b>	4 Channel, 277V, 20A without power supply



# Square D® Clipsal® Changeover Relay Units

Square D® Clipsal® Changeover Relays are DIN-rail mounted devices with four independent, voltage free, changeover relay contacts.

Square D Clipsal Changeover Relays are designed to operate three-speed motors and two-way motor control devices. Some of their most common applications include operating motorized blinds, shutters, curtains and skylights (open/closed) where they provide a much simpler alternative to traditional and obtrusive relay interlocking systems.



Changeover Relay Unit

## TECHNICAL INFORMATION

Nominal Supply Voltage	<b>110-120V</b> (SLC5504TRVFC and SLC5504TRVFCP) <b>250-277V</b> (SLC5504HRVFC and SLC5504HRVFCP)
Frequency Range(s)	<b>50 - 60Hz</b>
Clipsal C-Bus Supply Voltage	<b>15–36Vdc @ 18 mA required for programming when electrical power source is not connected.</b>  <b>Sources 200 mA to the C-Bus Network with electrical power source connected.</b>
Electrical isolation	<b>3.75 kV RMS from C-Bus to power source</b>
Contact Type	<b>Changeover, Non-latching</b>
C-Bus Connections	<b>2 RJ-45 connectors, CAT 5 UTP cable req.</b>
Electrical Terminals	<b>Accommodates (1) #12 or up to (2) #14 - 16 AWG (2 x 1.3 mm<sup>2</sup> or 1 x 3.3 mm<sup>2</sup>)</b>
Status Indicators	<b>C-Bus Indicator Unit Status Indicator Load Indicator</b>
Dimensions	<b>5.67 x 3.35 x 2.60 inches (144 x 85 x 65mm)</b>
Weight	<b>13 oz (370g) (With Power Supply) 17 oz (490g) (Without Power Supply)</b>
Mounting	<b>DIN rail, 8M wide</b>
Operating Environment	<b>32°F to 113°F (0°C to 45°C) RH: 95%, noncondensing</b>
Standards	<b>UL: Listed 508 Industrial Control Equipment CSA 22.2 No. 14 Industrial Control Equipment FCC: Part 15, Class B Digital Device</b>

\*For Diagram see technical section page 89

## PRODUCT FEATURES

- Four (4) isolated independently operating relay channels
- Two (2) convenient built-in Clipsal C-Bus™ network connectors (RJ-45)
- Non-volatile memory stores operating status for recovery from power outage
- LED Indicators show the status of the network and the unit
- Changeover Relays ratings: (120V AC Max)
- 2A Exhaust fans (shaded pole induction motors)
- 2A Ceiling fans (split-phase induction motors)

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with the C-Bus Toolkit Software

CATALOG NUMBER	DESCRIPTION
<b>SLC5504TRVFC</b>	4 Channel changeover relay unit 120Vac, with power supply
<b>SLC5504TRVFCP</b>	4 Channel changeover relay unit 120Vac, without power supply
<b>SLC5504HRVFC</b>	4 Channel changeover relay unit 277Vac, with power supply
<b>SLC5504HRVFCP</b>	4 Channel changeover relay unit 277Vac, without power supply





## Introduction to Area Lighting Panels

Square D® Clipsal® Area Lighting Panels from Schneider Electric are a simple, convenient way to realize daylight harvesting schemes in an individual conference room or suite within a commercial building. They are ideally suited to meet energy code requirements related to reduction in lighting loads by integrating natural light with artificial light.

Area Lighting Panels offer the flexibility of being set up as a stand-alone system or connected as a part of a larger Square D Clipsal network. A simple Cat 5 cable connection gives the pre-engineered enclosed panels the ability to integrate light-level detection, occupancy detection, keypads and switching. Along with ease of network connectivity and simplified programming, Area Lighting Panels also provide easy installation and reduced field-wiring costs.

Outfitting a conference room or suite with a Square D Clipsal light-level sensor allows an Area Lighting Panel to automatically dim lights to capitalize on available natural light. When using Square D Clipsal occupancy sensors, the panel automatically turns lights off after everyone leaves. Additionally, various pre-programmed lighting scenes can be automatically executed by the panel by pressing a button on a Square D Clipsal lighting control keypad.

Area Lighting Panels provide unparalleled installation flexibility for electrical contractors. They provide the ability to integrate Square D Clipsal keypads and Square D Clipsal light-level and occupancy sensors without the complexity of line voltage wiring connections. A single Cat 5 cable is all that is required in most applications to connect the inputs to a panel, which may be mounted in either an electrical closet or ceiling space. Power is distributed to the panel from a single home-run connection to the power source. Consultants will find that designing rooms in a commercial building with a focus on energy savings and tasteful lighting scenes is easier, because there is less wiring complexity.

# Square D® Clipsal® Area Lighting Panels

Square D® Clipsal® Area Lighting Panels are ideally suited to meet lighting control energy code requirements in classrooms, offices and other small spaces. These devices provide the ability to integrate keypads, occupancy sensing, light level detection, and switching without the mess of complex control wiring. A simple CAT-5 cable is all that is required to connect sensors and keypads.

Clipsal Area Lighting Panels can operate as independent stand-alone islands or as part of an entire facility wide lighting control system. Enclosures can easily be mounted in electrical closets or in ceiling spaces. They include all necessary connections and are UL Listed. Area Lighting Panels can also be used in conjunction with Powerlink® panels.

Clipsal Area Lighting Panels can be used for on/off switching, stepped dimming or continuous dimming applications. All relays feature rugged 20A rated contacts for switching electronic ballast loads. Models with continuous dimming capabilities are rated for either NEC Class 1 or Class 2 wiring.



8 channel 20A Relay Area Lighting Panel

## TECHNICAL INFORMATION

Rated Voltage	<b>120V &amp; 277V 50/60Hz</b>
Number of Units per Network	<b>Use the C-Bus calculator, a software utility to determine total network current load or Toolkit software</b>
Electrical isolation	<b>3.5kV RMS from C-Bus to the line</b>
Relays	<b>20A</b>
Short Circuit Current Rating	<b>65kA (120V), 14kA (277V)</b>
C-Bus Connections	<b>RJ45</b>
<b>Dimensions</b>	
12M Enclosure	<b>12.78 in. x 9.09 in. x 4.0 in.</b>
24M Enclosure	<b>14.50 in. x 14.94 in. x 4.0 in.</b>
Standards	<b>UL: Listed 508A, FCC part 15.101, Class B Device EN61000-4-2 Immunity to ESD</b>

\*For Diagram see technical section page 89

## PRODUCT FEATURES

- Relay models: Four or eight relay outputs, rated 20A
- 0-10V outputs for control of 0-10V dimmable fluorescent ballast (suitable for use with MARK 7®, Sylvania Quicktronic®, and Universal SuperDim®)
- Integral neutral and ground bar terminal strips
- Plenum-rated for ceiling applications
- Bypass mode to facilitate quick start up
- Meets NEC Article 409
- UL Listed 508A, SCCR current ratings: 65kA (120V), 14kA (277V)
- Surface Mount NEMA 1 Enclosure

## DISTRIBUTED INTELLIGENCE

- Compatible with all Clipsal devices and the Square D® Powerlink® NF3000G3C controller
- Easily configured with Learn Mode or with C-Bus™ Toolkit software

CATALOG NUMBER	ENCLOSURE	DESCRIPTION
4 Channel 20A Relay Models		
<b>SLCZ042000T</b>	12M	4 Channel 20A Relay @ 120V with power supply*
<b>SLCZ042000H</b>	12M	4 Channel 20A Relay @ 277V with power supply*
<b>SLCZ042000TP</b>	12M	4 Channel 20A Relay @ 120V without power supply
<b>SLCZ042000HP</b>	12M	4 Channel 20A Relay @ 277V without power supply
8 Channel 20A Relay Models		
<b>SLCZ082000T</b>	24M	8 Channel 20A Relay @ 120V with power supply*
<b>SLCZ082000H</b>	24M	8 Channel 20A Relay @ 277V with power supply*
<b>SLCZ082000TP</b>	24M	8 Channel 20A Relay @ 120V without power supply
<b>SLCZ082000HP</b>	24M	8 Channel 20A Relay @ 277V without power supply
4 Channel 20A Relay Models with 0-10V Output Units		
<b>SLCZ04204AT</b>	24M	4 Channel 20A Relay @ 120V with power supply and 4 Channel 0-10V Output Unit*
<b>SLCZ04204AH</b>	24M	4 Channel 20A Relay @ 277V with power supply and 4 Channel 0-10V Output Unit*
<b>SLCZ04204ATP</b>	24M	4 Channel 20A Relay @ 120V without power supply and 4 Channel 0-10V Output Unit
<b>SLCZ04204AHP</b>	24M	4 Channel 20A Relay @ 277V without power supply and 4 Channel 0-10V Output Unit
4 Channel Phase Angle Dimmer Models		
<b>SLCZ00004DT</b>	12M	4 Channel Phase Angle Dimmer @ 120V with power supply
<b>SLCZ00004DTP</b>	12M	4 Channel Phase Angle Dimmer @ 120V without power supply
4 Channel 20A Relay Models with Phase Angle Dimmer Units		
<b>SLCZ04204DT</b>	24M	4 Channel 20A Relay @ 120V with power supply and 4 channel phase angle dimmer unit
<b>SLCZ04204DTP</b>	24M	4 Channel 20A Relay @ 120V without power supply and 4 channel phase angle dimmer unit

\* For stand-alone applications order unit with power supply

# Square D® Clipsal® 8M Enclosure

Square D® Clipsal® Enclosures provide a housing for various Clipsal DIN-mounted devices. The 8M enclosure is specifically designed for distributed applications that require physical proximity between DIN units and keypads, sensors or controlled loads.

Suitable for surface mounting, the 8M enclosure consists of a box with a cover and a DIN rail for mounting one 8M or two 4M Clipsal units. The enclosure also has provisions for mounting neutral and ground bars.



8M Enclosure

## TECHNICAL INFORMATION

### 8M Enclosure

Type	<b>NEMA 1</b>
DIN Module Capacity	<b>One 8M or two 4M Clipsal units</b>
Dimensions	<b>12.57 in. (L) x 8.88 in. (W) x 3.8 in. (D) [319 mm (L) x 226 mm (W) x 97 mm (D)]</b>
Mounting	<b>DIN rail</b>
Weight	<b>8.4 lb (3.81 kg)</b>

\*For Diagram see technical section page 90

## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure
- Welded sheet steel with knockouts
- Gray baked enamel, electrodeposited over cleaned, phosphatized steel
- Triple-lead cover screws for fast installation of cover
- DIN rail, suitable for mounting one 8M or two 4M Clipsal DIN modules
- UL Listed

CATALOG NUMBER	DESCRIPTION
<b>SLC8M</b>	8M DIN Enclosure*
<b>PK7GTA</b>	Ground/Neutral Bar†
<b>PKG TAB</b>	Neutral Insulator Kit†
<b>SLC4CSF8</b>	Filler Plate, 4M

\* Includes one ground bar, one filler plate, cable ties and mounts for wire management.  
 † Additional terminal bar and insulator for devices that require neutral connection points for loads, such as a relay unit.  
 Note: The Clipsal 8M Enclosure will accept one additional terminator bar (PK7GTA) intended for load neutral connections. This is to be used when the Clipsal unit mounted inside requires neutral connection points for loads, i.e. a relay unit. Use in conjunction with a Neutral Insulator Kit (PKG TAB)

# Square D® Clipsal® 12M Enclosure

Square D® Clipsal® Enclosures provide a housing for various Clipsal DIN-mounted devices. The 12M enclosure is specifically designed for distributed applications that require physical proximity between DIN units and keypads, sensors or controlled loads.

Suitable for surface mounting, the 12M enclosure consists of a box with a cover and a DIN rail for mounting three 4M Clipsal units, one 8M unit plus one 4M unit or one 12M unit. The enclosure also has factory mounted neutral and ground bars.



12M Enclosure

## TECHNICAL INFORMATION

### 12M Enclosure

Type	<b>NEMA 1</b>
DIN Module Capacity	<b>One 12M, one 8M + one 4M or three 4M Clipsal units</b>
Dimensions	<b>12.78 in. (W) x 9.09 in. (T) x 4.0 in. (D) [325 mm (L) x 231 mm (W) x 102 mm (D)]</b>
Standard	<b>UL Standard 50 Enclosures for electrical equipment</b>
Mounting	<b>DIN rail</b>
Weight	<b>11.7 lb (5.3 kg)</b>

\*For Diagram see technical section page 90

## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure
- Welded sheet steel with knockouts
- Gray baked enamel, electrodeposited over cleaned, phosphatized steel
- Triple-lead cover screws for fast installation of cover
- DIN rail, suitable for mounting one 12M or three 4M or one 8M and one 4M Clipsal DIN module
- UL Listed

CATALOG NUMBER	DESCRIPTION
SLC12MSG	12M DIN Enclosure*

\* Includes one DIN rail, one ground bar, and one insulated neutral terminal bar preinstalled on the mounting pan. Also included are 2 ft. of flexible, Class 2 barrier, four pan mounting screws, four cover mounting screws, and two DIN rail stops.

# Square D® Clipsal® 24M Enclosure

Square D® Clipsal® Enclosures provide a housing for various Clipsal DIN-mounted devices. The 24M enclosure is specifically designed for distributed applications that require physical proximity between DIN units and keypads, sensors or controlled loads.

Suitable for surface mounting, the 24M enclosure consists of a box with a hinged door and two rows for mounting Clipsal DIN-mounted C-Bus™ units. Each row can hold one 12M unit, one 8M unit plus one 4M unit, or three 4M units. The enclosure also has provisions for additional neutral and ground bars.



24M Enclosure

## TECHNICAL INFORMATION

### 24M Enclosure

Type	<b>NEMA 1</b>
DIN Module Capacity	<b>Two rows for mounting Clipsal DIN-mounted C-Bus™ units. Each row can hold one 12M unit, one 8M unit plus one 4M unit, or three 4M units</b>
Dimensions	<b>14.50 in. (W) x 14.94 in. (T) x 4.0 in. (D) [368 mm (L) x 379 mm (W) x 102 mm (D)]</b>
Mounting	<b>DIN rail</b>
Standard	<b>UL Standard 50 Enclosures for electrical equipment</b>
Weight	<b>18.9 lb (8.6 kg)</b>

\*For Diagram see technical section page 90

## PRODUCT FEATURES

- Surface-mount NEMA 1 enclosure
- Welded sheet steel with knockouts
- Gray baked enamel, electrodeposited over cleaned, phosphatized steel
- Triple-lead cover screws for fast installation of cover
- Hinged trim for easy access
- DIN rail, suitable for mounting Clipsal DIN-mounted C-Bus units. Each row can hold one 12M unit, one 8M unit plus one 4M unit, or three 4M units.
- UL Listed

CATALOG NUMBER	DESCRIPTION
<b>SLC24MSG</b>	24M DIN Enclosure*
<b>PK7GTA</b>	Ground/Neutral Bar†
<b>PKG TAB</b>	Neutral Insulator Kit†

\* The enclosure comes with two DIN rails, two ground bars, and two insulated neutral terminal bars pre-installed on the mounting pan. Also included are 2 ft. of flexible, Class 2 barrier, four pan mounting screws, and four door mounting screws, and four DIN rail stops.

† Additional terminal bar and insulator for devices that require neutral connection points for loads, such as a relay unit.

Note: The Clipsal 24M Enclosure will accept one additional terminator bar (PK7GTA) intended for load neutral connections. This is to be used when the Clipsal unit mounted inside requires neutral connection points for loads, i.e. a relay unit. Use in conjunction with a Neutral Insulator Kit (PKG TAB)

# Square D® Clipsal® 36M Enclosures

Square D® Clipsal® Enclosures provide a multi-purpose means for housing various Clipsal DIN-mounted devices. Suitable for flush or surface mounting, the enclosure consists of a cabinet, a mounting pan assembly, and a cover assembly. The cabinet can be ordered separately, allowing for its installation with the rough-in of field wiring. The mounting pan comes with one L barrier, four horizontal barriers, and three DIN rails pre-installed. Optional accessories are available to meet the needs of particular installations.

The 36M enclosure provides three rows for mounting Clipsal DIN-mounted C-Bus™ units. Each row has the capacity to hold one 12M unit, one 8M unit with one 4M unit, or three 4M units.

Square D Clipsal 36M Enclosures are specifically designed for conventional installation near the main breaker panel. They provide a simple means of installing Clipsal DIN-mounted units with all of the necessary wiring, neutral bar, barriers and other components included. Once installed, the enclosure system allows for easy system maintenance with the Clipsal units accessible.

Additional barriers provide greater flexibility to meet requirements of NEC Article 725 for separation of class 2 circuits.



36M Enclosure

## TECHNICAL INFORMATION

### 36M Enclosure

Type	<b>NEMA 1</b>
DIN Module Capacity	<b>Three DIN rails, each with the capacity for one 12M, one 8M with one 4M, or three 4M Clipsal DIN units</b>
Dimensions with Cover	<b>40.6 in. (L) x 15.4 in. (W) x 3.9 in. (D) [1031 mm (L) x 392 mm (W) x 99 mm (D)]</b>
Standard	<b>UL Standard 50 Enclosures for electrical equipment</b>
Module Mounting	<b>DIN rail</b>
Total Weight	<b>57.7 lb (26.17 kg)</b>

\*For Diagram see technical section page 91

## PRODUCT FEATURES

- NEMA 1 enclosure suitable for flush or surface mounting
- Welded sheet steel with knockouts
- Gray baked enamel paint, electrodeposited over cleaned, phosphatized steel
- Triple-lead cover screws for fast installation of cover
- Three DIN rails, each suitable for mounting Clipsal DIN units in one of the following configurations:
  - One 12M unit
  - One 8M module with one (1) 4M unit
  - Three 4M units
- UL Listed

CATALOG NUMBER	DESCRIPTION
<b>SLC36C</b>	Enclosure Cabinet, 40 in.
<b>SLC36MFG</b>	Mounting pan with gray flush-mount cover
<b>SLC36MSG</b>	Mounting pan with gray surface-mount cover
<b>SLC36MFW</b>	Mounting pan with white flush-mount cover
<b>PK18GTA</b>	Neutral bar, 18 terminal <sup>1,2,3</sup>
<b>PKGTAB</b>	Neutral insulator kit
<b>PK23GTA</b>	Ground bar, 23 terminal <sup>4</sup>
<b>SLCNT10</b>	Isolated neutral terminal strip (10 position) <sup>3,5</sup>
<b>SDM4AC</b>	Two duplex power receptacles
<b>SDM8AC</b>	Four duplex power receptacles
<b>PK4FL</b>	Door latch, locking
<b>SLC4CSF8</b>	Filler plate, 4M
<b>SLC36LB</b>	L barrier <sup>6</sup>

<sup>1</sup> For use as a neutral bar; requires one grounding bar insulator kit (PKGTAB).

<sup>2</sup> Maximum of four neutral terminal bars (two at top, two at bottom). Use neutral terminal bars in common neutral applications.

<sup>3</sup> Mixing of neutral terminal bars and isolated neutral terminal strips is permitted. Mixing permits an additional bar at both top and bottom (three at top and three at bottom).

<sup>4</sup> One ground bar is provided as standard. The pan will accept up to two additional ground bars.

<sup>5</sup> Maximum of four isolated neutral terminal strips (two at top, two at bottom). Isolated neutral terminal strips allow individual neutrals to be maintained.

<sup>6</sup> A second L barrier is required when neutral terminal bars or strips are mounted in both ends of the enclosure. A second L barrier cannot be used if a duplex power outlet (SDM4AC or SDM8AC) is installed.



# Square D® Clipsal® 60M Enclosures

Square D® Clipsal® Enclosures provide a multi-purpose means for housing various Clipsal DIN-mounted devices. Suitable for flush or surface mounting, the enclosure consists of a cabinet, a mounting pan assembly, and a cover assembly. The cabinet can be ordered separately, allowing for its installation with the rough-in of field wiring. Options are available to meet the needs of particular installations.

The 60M enclosure provides five rows for mounting Clipsal DIN-mounted C-Bus™ units. Each row has the capacity to hold one 12M unit, one 8M unit with one 4M unit or three 4M units.

Square D Clipsal 60M Enclosures are specifically designed for conventional installation near the main breaker panel. They provide a simple means of installing Clipsal DIN-mounted units with all of the necessary wiring, neutral bar, barriers and other components included. Once installed, the enclosure system allows for easy system maintenance with the Clipsal units accessible.



60M Enclosure

## TECHNICAL INFORMATION

60M Enclosure

Type	<b>NEMA Type 1</b>
DIN Module Capacity	<b>Five DIN rails, each with the capacity for one 12M, one 8M with one 4M, or three 4M Clipsal DIN units</b>
Dimensions with Cover (flush mount)	<b>40.6 in. (L) x 15.4 in. (W) x 3.9 in. (D) [1031 mm (L) x 392 mm (W) x 99 mm (D)]</b>
Dimensions with Cover (surface mount)	<b>39.4 in. (L) x 14.2 in. (W) x 3.9 in. (D) [1000 mm (L) x 360 mm (W) x 99 mm (D)]</b>
Dimensions of Enclosure Cabinet	<b>39.4 in. (L) x 14.2 in. (W) x 3.69 in. (D) [1000 mm (L) x 360 mm (W) x 99.8 mm (D)]</b>
Standard	<b>UL Standard 50 Enclosures for electrical equipment</b>
Module Mounting	<b>DIN rail</b>
Total Weight	<b>57.7 lb (26.17 kg)</b>

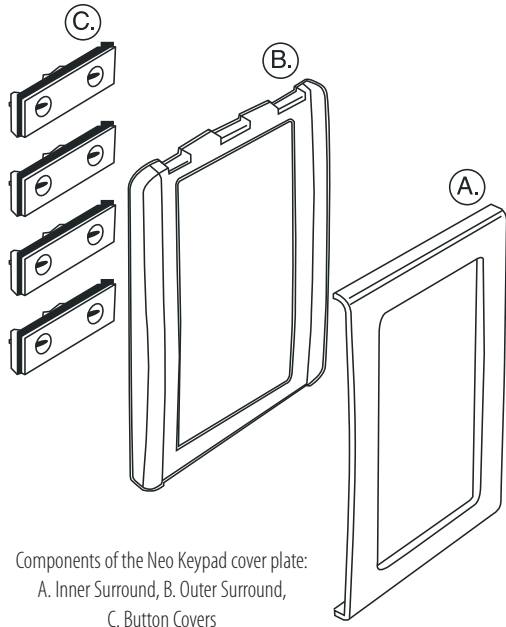
\*For Diagram see technical section page 91

## PRODUCT FEATURES

- NEMA Type 1 enclosure suitable for flush or surface mounting
- Welded sheet steel with knockouts
- ANSI Gray #49 baked enamel paint, electrodeposited over cleaned, phosphatized steel
- Triple-lead cover screws for fast installation of cover
- UL listed, 600V rated Class 2 barrier included
- (3) pre-installed 23 position ground bars and (5) 12 position isolated neutral assemblies included
- Five DIN rails, each suitable for mounting Clipsal DIN units in one of the following configurations:  
One 12M unit  
One 8M unit with one (1) 4M unit  
Three 4M units
- UL Listed

CATALOG NUMBER	DESCRIPTION
SLC36C	Enclosure Cabinet, 40 in.
SLC60MFG	Mounting pan with gray flush-mount cover
SLC60MSG	Mounting pan with gray surface-mount cover
SLC60MFW	Mounting pan with white flush-mount cover
SDM4AC	Two duplex power receptacles
SLC5100TUS	Telephone interface unit
PK4FL	Door latch, locking
SLC4CSF8	Filler plate, 4M

# Neo™ Keypad - Specifying Colors When Ordering



## KEYPAD ASSEMBLIES

Order numbers for the Neo Keypad assemblies indicate the number of buttons desired on the keypad and the color of each customizable component (inner surround, outer surround, and button cover).

Color numbers are taken from the "Neo Colors" table and must be given in the following order: outer surround, inner surround, and button covers.

For example, in the diagram below, SLC5058NL282 represents an order for a Neo Keypad with eight buttons, a white (#2) outer surround, a brushed aluminum (#8) inner surround, and white (#2) button covers.

## KEYPAD ASSEMBLIES STANDARD

For easy ordering there are 3 standard keypad colors available.

White: SLC505( )NLWE

Cream: SLC505( )NLCM

Brushed Aluminum w/Slate: SLC505( )NLGB

( ) - designates space for button configuration



SLC505( )NLWE



SLC505( )NLCM



SLC505( )NLGB

SLC505(8)NL(2)(8)(2)

Catalog Number	Keypad Buttons
2	Two
4	Four
8	Eight

Outer Surround Color

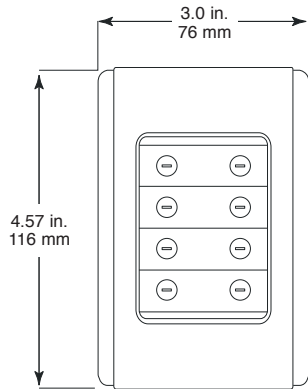
Inner Surround Color

Button Cover Color

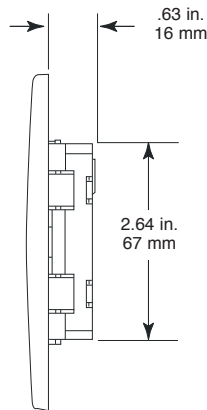
Name	Color Number	Color
Slate	1	
White	2	
Cream	3	
Soft Gray	4	
Desert Sand	5	
Black	6	
Brown	7	
Brushed Aluminum*	8	
Gold*	9	

\*Only the inner surround is available in Brushed Aluminum and Gold

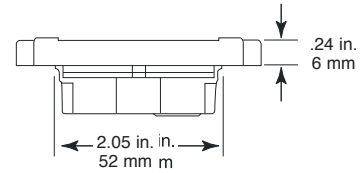
## Square D® Clipsal® Neo™ Keypads



Front view of keypad, including external height and width measurements of case

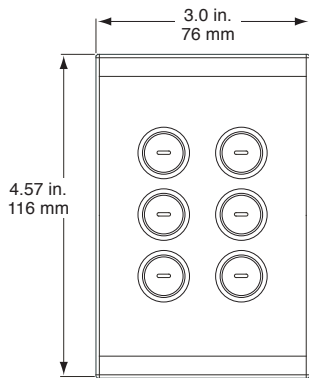


Side view of keypad, including height and depth requirements for insertion into wall

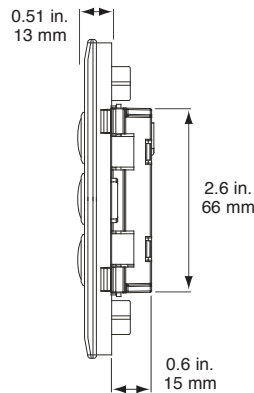


Bottom view of keypad, including measurements for width of unit and depth case extends from wall

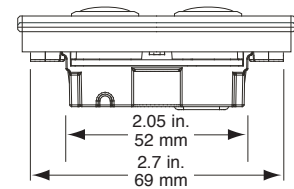
## Square D® Clipsal® Saturn™ Keypads



Front view of keypad, including external height and width measurements of case

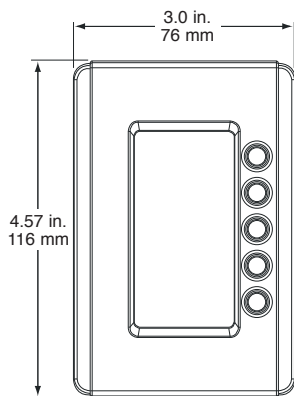


Side view of keypad, including height and depth requirements for insertion into wall

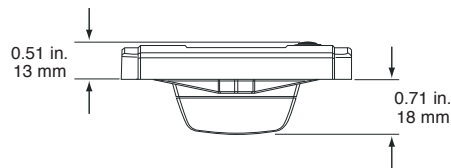


Top view of keypad showing width

## Square D® Clipsal® Neo™ Keypads with Dynamic Labeling Technology™

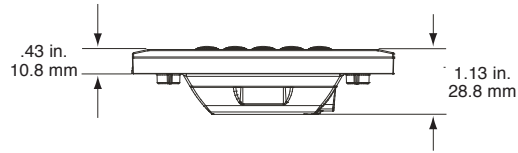
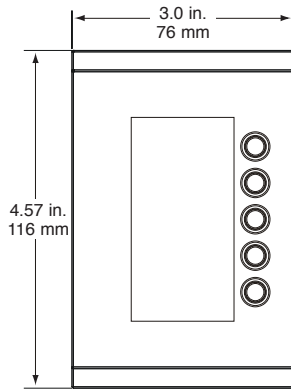


Front view of keypad, including external height and width measurements of case



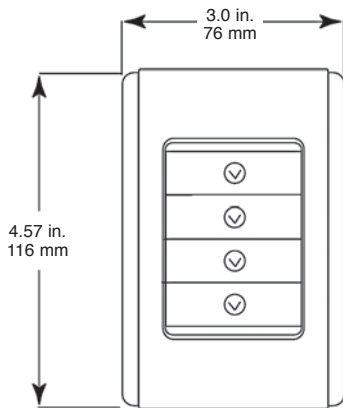
Top-side view of the Neo DLT keypad illustrates the depth the case extends into and out of a wall

## Square D® Clipsal® Saturn™ Keypads with Dynamic Labelling Technology™

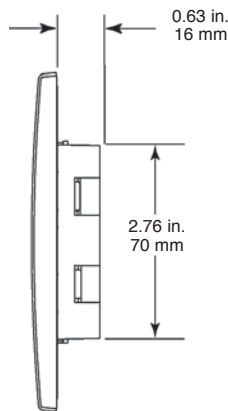


Front and top-side views of the Saturn DLT keypad illustrate its length and width and the depth the case extends into and out of a wall

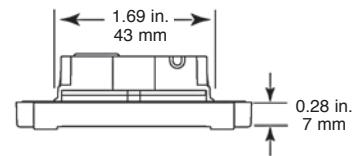
## Square D® Clipsal® Neo™ Style Decorator Keypads



Front view of keypad, including external height and width measurements of Faceplate

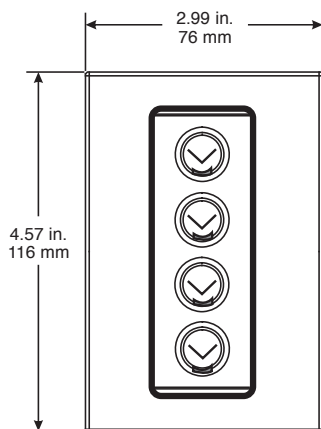


Side view of keypad, including height and depth requirements for insertion into wall

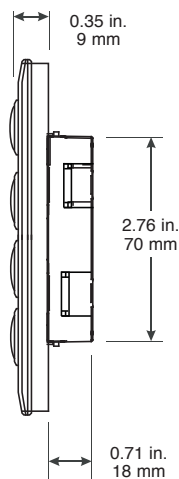


Top view of keypad, including depth of face plate

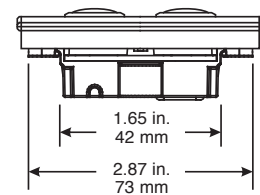
## Square D® Clipsal® Saturn™ Style Decorator Keypads



Front view of keypad, including external height and width measurements of face plate

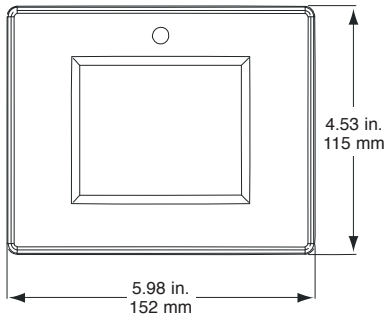


Side view of keypad, including height and depth requirements for insertion into wall

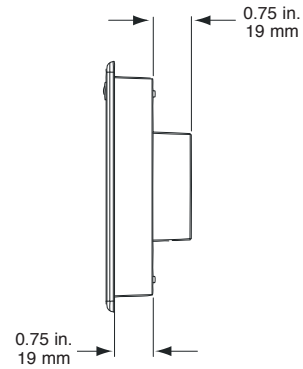


Top view of keypad showing width

## Square D® Clipsal® Monochrome Touch Screen

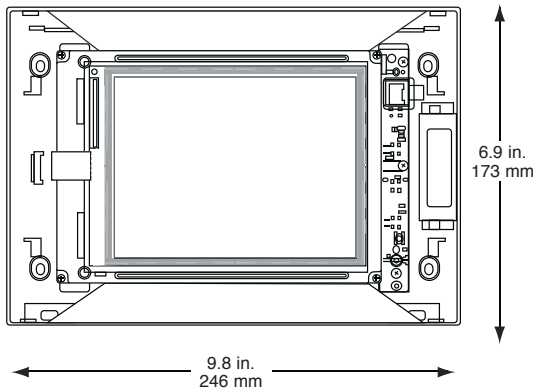


Front view of Monochrome Touch Screen

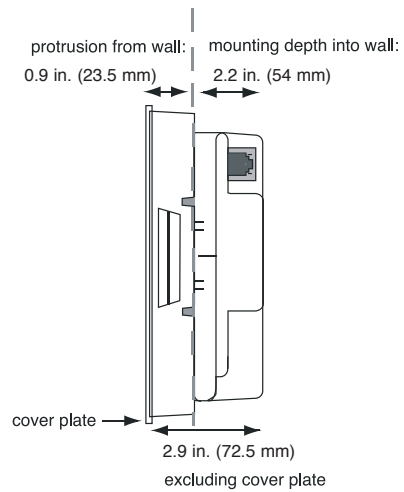


Side view of Monochrome Touch Screen

## Square D® Clipsal® Color Touch Screen

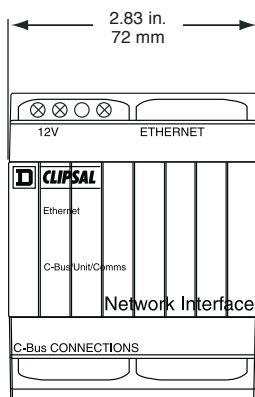


Front view of Color Touch Screen

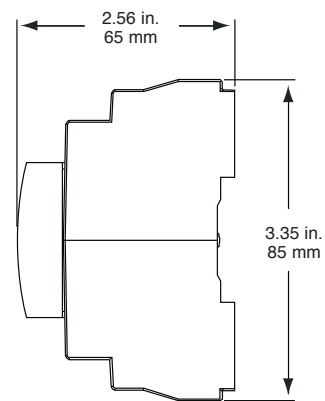


Side view of Color Touch Screen

## Square D® Clipsal® Ethernet Network Interface

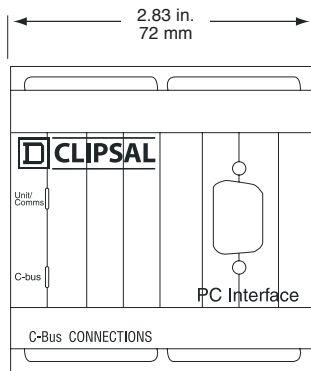


View of the Ethernet Network Interface showing width

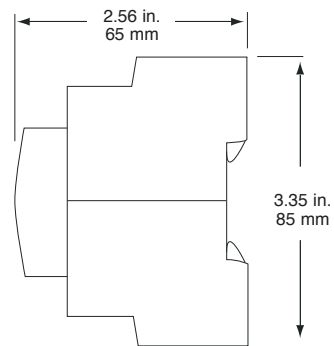


View of the Ethernet Network Interface showing height and depth

## Square D® Clipsal® PC Interface

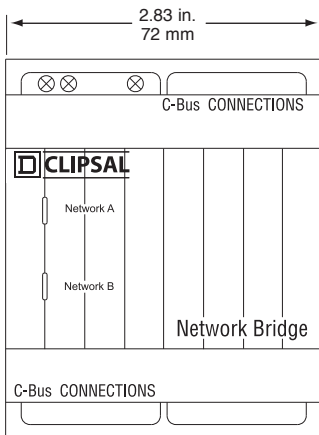


Front view of the PC Interface showing width

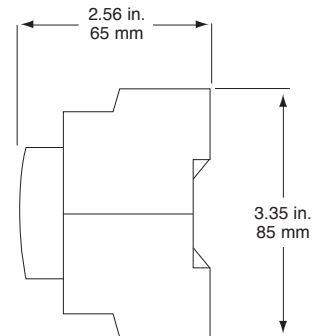


Side view of the PC Interface showing height and depth

## Square D® Clipsal® Network Bridge

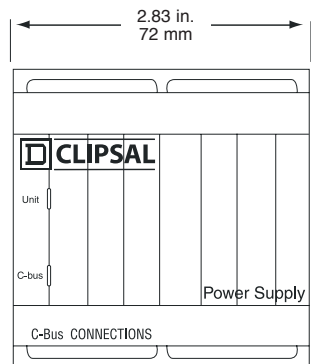


Front view of the Network Bridge showing width

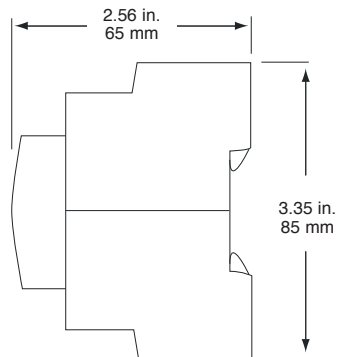


Side view of Network Bridge showing height and depth

## Square D® Clipsal® Power Supply

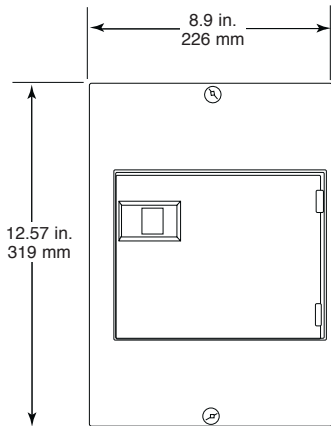


Front view of a Power Supply showing width



Side view of a Power Supply showing depth and height

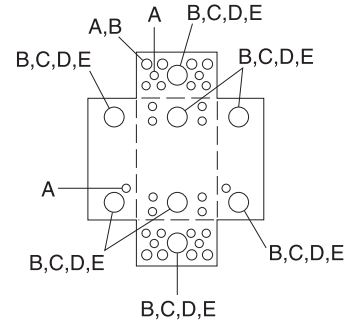
## Square D® Powerlink® Device Router/Device Power Supply



Front view of 8M Enclosure box showing height and width



Side view of 8M Enclosure box showing depth

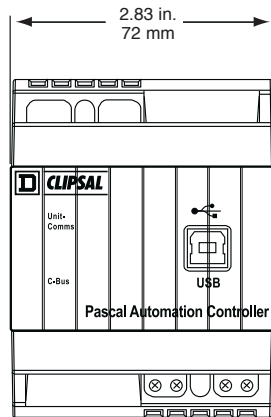


Conduit knockouts for the 8M Enclosure

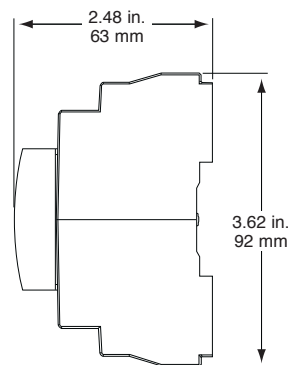
### Clipsal 8M Enclosure Knockouts

Symbol	A	B	C	D	E
Conduit Size	½	¾	1	1¼	1½

## Square D® Clipsal® Pascal Automation Controller

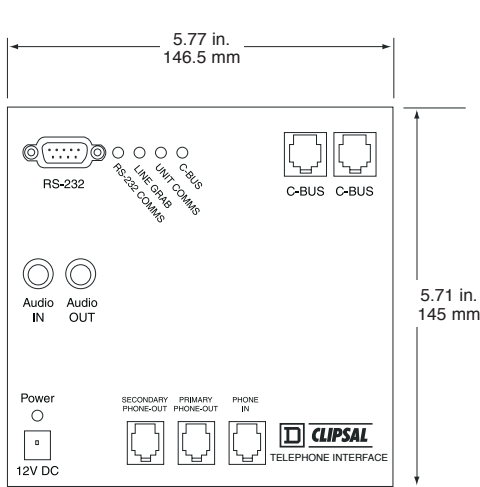


Front view of the Pascal Automation Controller



Side view of the Pascal Automation Controller

## Square D® Clipsal® Telephone Interface Unit

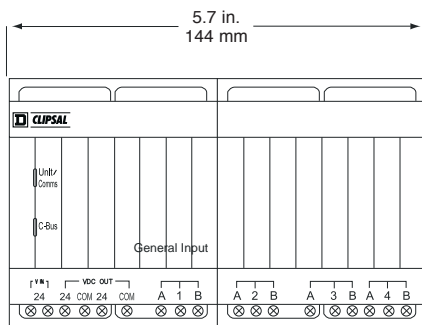


Front view of Telephone Interface Unit

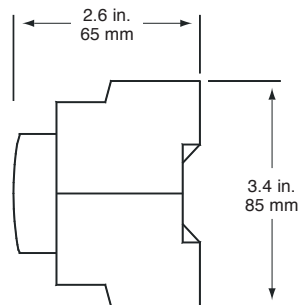


Side view of Telephone Interface Unit

## Square D® Clipsal® General Input Unit

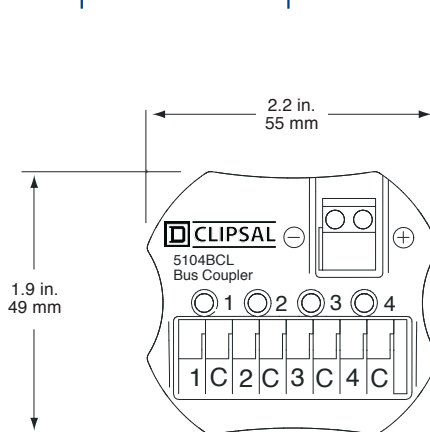


Top view of General Input Unit

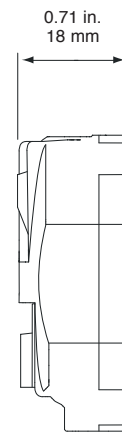


Side view of General Input Unit

## Square D® Clipsal® Bus Coupler



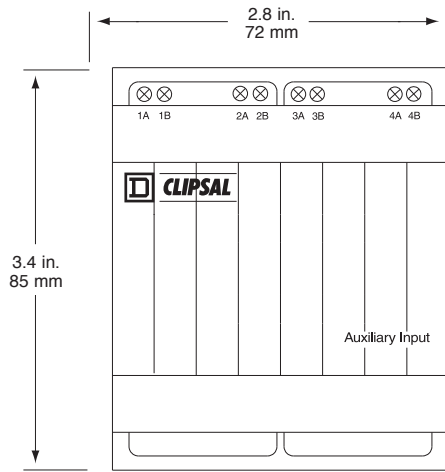
Top view of Four-Channel Bus Coupler



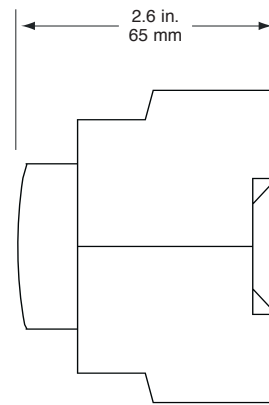
Side view of the Four-Channel Bus Coupler



## Square D® Clipsal® Four-Channel Auxiliary Input Unit

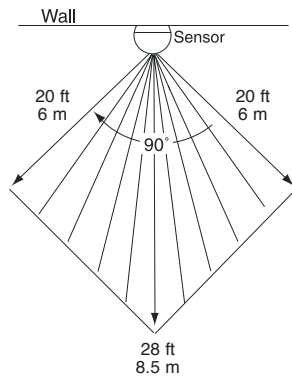


Top view of Four-Channel Auxiliary Input Unit

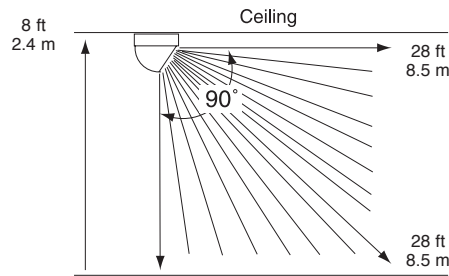


Side view of Four-Channel Auxiliary Input Unit

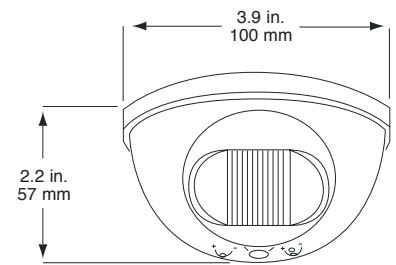
## Square D® Clipsal® Indoor PIR Occupancy Sensor



Field of view from top of indoor occupancy sensor

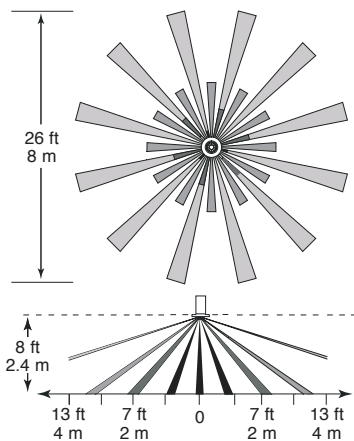


Field of view from side of indoor occupancy sensor

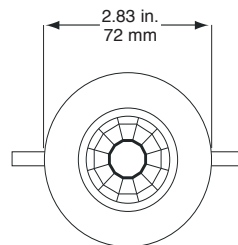


Front view of indoor occupancy sensor

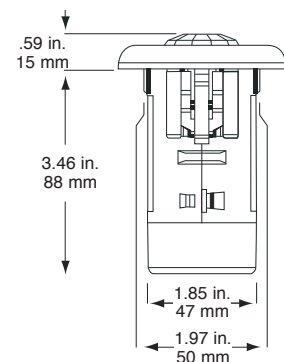
## Square D® Clipsal® 360° PIR Occupancy Sensor



Field of view from top and side for 360 PIR Occupancy Sensor mounted 8 ft. above floor

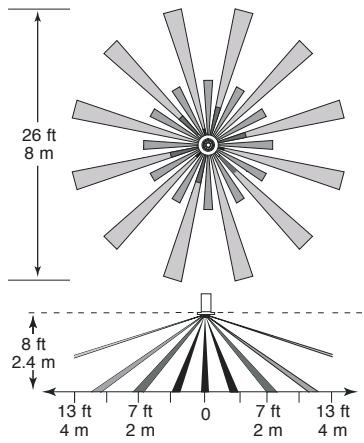


Front view of Clipsal 360° PIR Occupancy Sensor

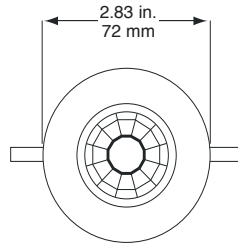


Side view of Clipsal 360° PIR Occupancy Sensor

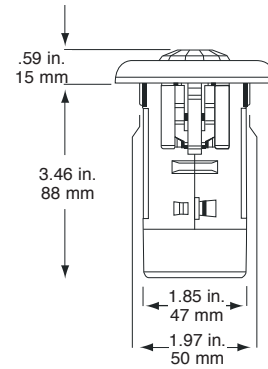
## Square D® Clipsal® 360° PIR Multi-Sensor



Field of view from top and side for 360 PIR Multi Sensor mounted 8 ft. above floor

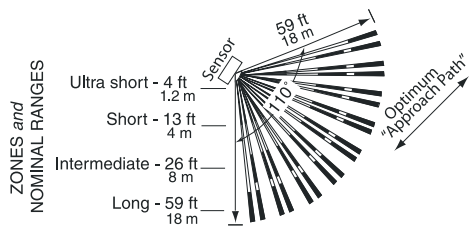


Front view of Clipsal 360° PIR Multi-Sensor

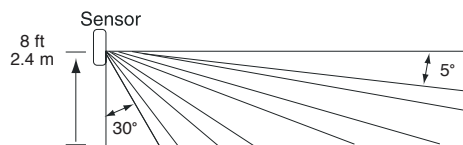


Side view of Clipsal 360° PIR Multi-Sensor

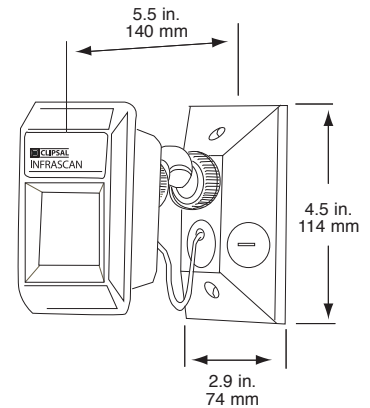
## Square D® Clipsal® Outdoor Motion Sensor



Field of view from top of Outdoor Motion Sensor

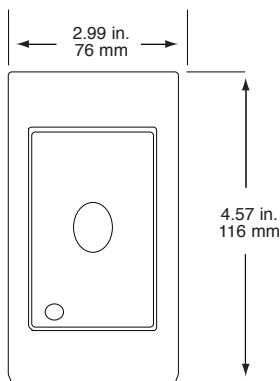


Field of view from side of Outdoor Motion Sensor

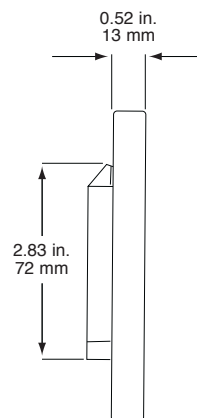


Side view of Outdoor Motion Sensor

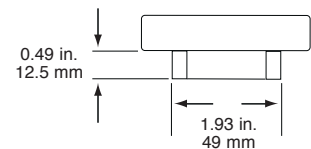
## Square D® Clipsal® Light-Level Sensor



Front view of Light-Level Sensor

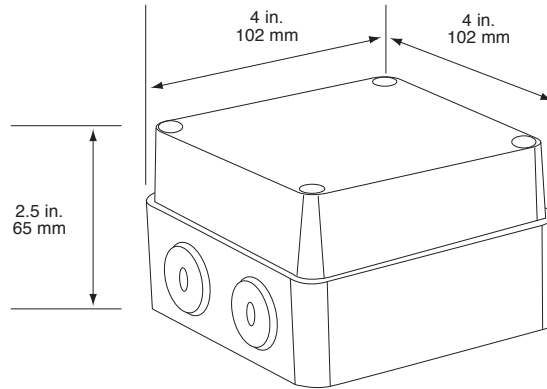


Side view of Light-Level Sensor



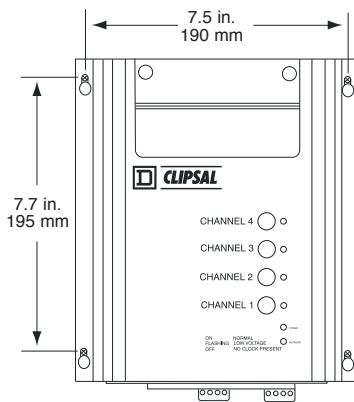
Top view of light-level sensor

## Square D® Clipsal® Outdoor Light-Level Sensor

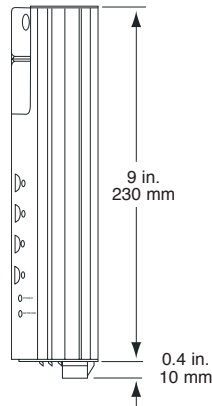


View including height, width and depth dimensions

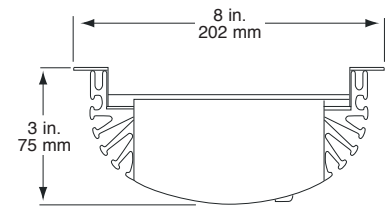
## Square D® Clipsal® Professional Series Dimmer



Front view including mounting centers

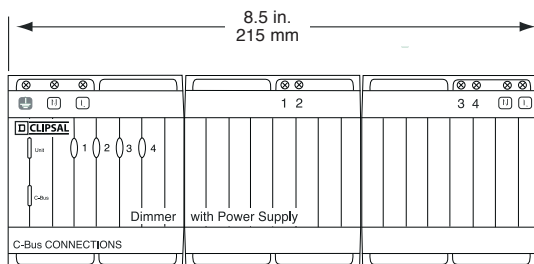


Side view

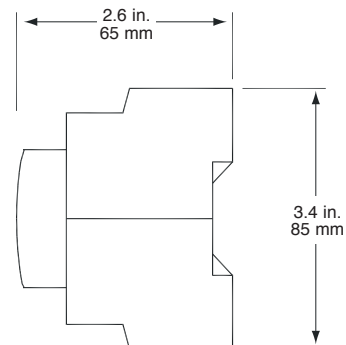


Top view

## Square D® Clipsal® Phase Angle Dimmer Unit

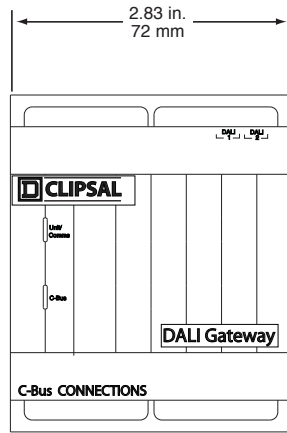


Front view of the Phase Angle Dimmer Unit

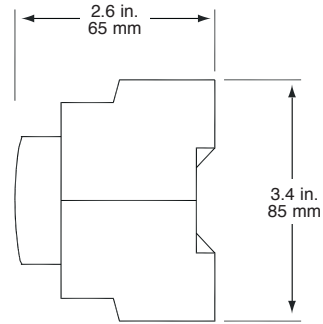


Side view of the Phase Angle Dimmer Unit

## Square D® Clipsal® 2 Channel DALI Gateway

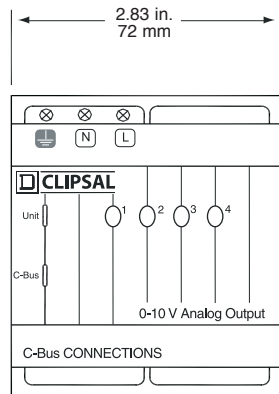


Front view of DALI Gateway

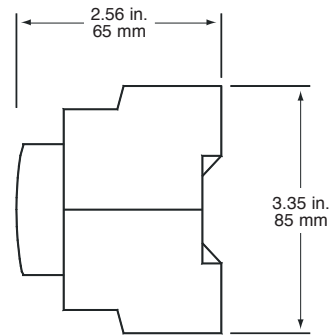


Side view of DALI Gateway

## Square D® Clipsal® 4 Channel 0-10V Fluorescent Ballast Dimmer

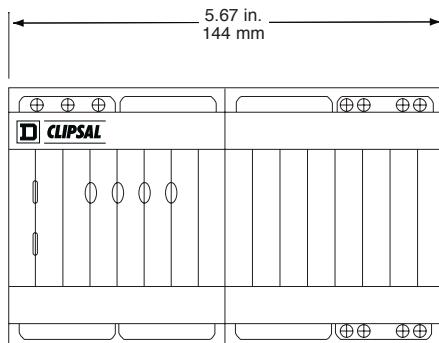


Front view of the 0-10V Fluorescent Ballast Dimmer

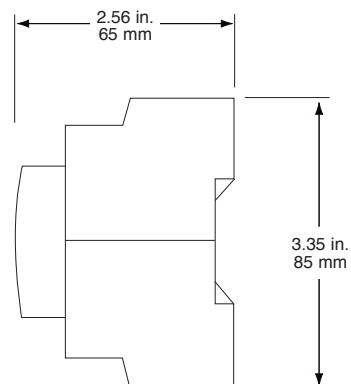


Side view of the 0-10V Fluorescent Ballast Dimmer

## Square D® Clipsal® 10 Amp Relay Unit

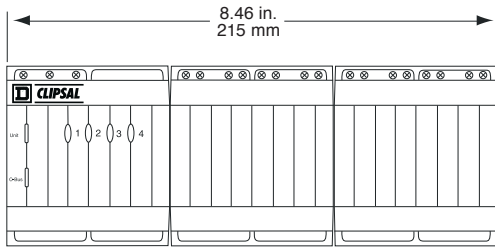


Front view of a Clipsal 4 Channel 10 Amp Relay without power supply

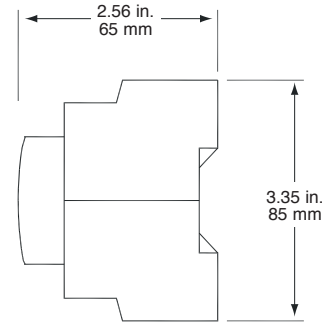


Side view of a Clipsal 4 Channel 10 Amp Relay

## Square D® Clipsal® 20 Amp Relay Units

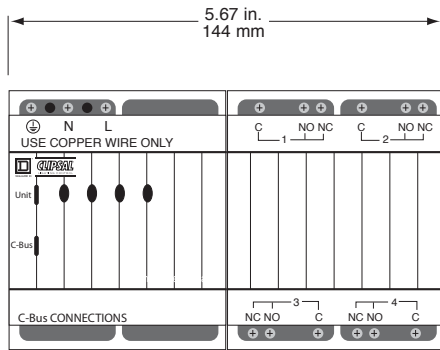


Front view of a Clipsal 4 Channel 20 Amp Relay with Power Supply

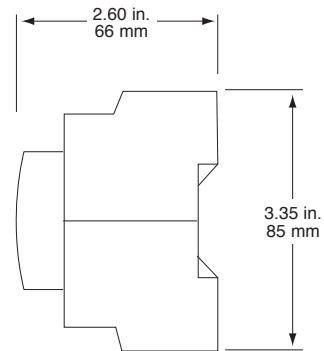


Side view of a Clipsal 4 Channel 20 Amp Relay

## Square D® Clipsal® Changeover Relay Units

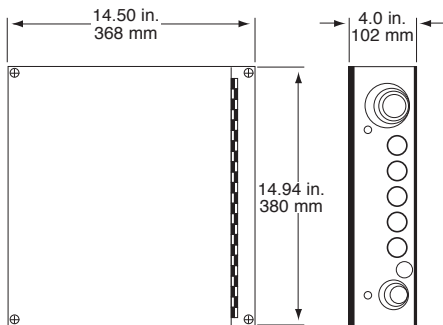


Front view of a Clipsal Changeover Relay

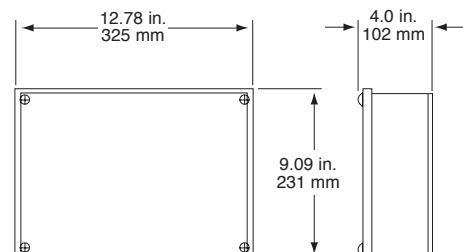


Side view of a Clipsal Changeover Relay

## Square D® Powerlink® Area Lighting Panels

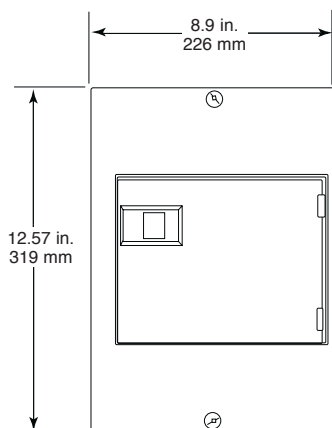


Dimensions for the 24M Enclosure

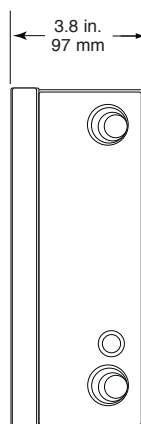


Dimensions for the 12M Enclosure

## Square D® Clipsal® 8M Enclosure

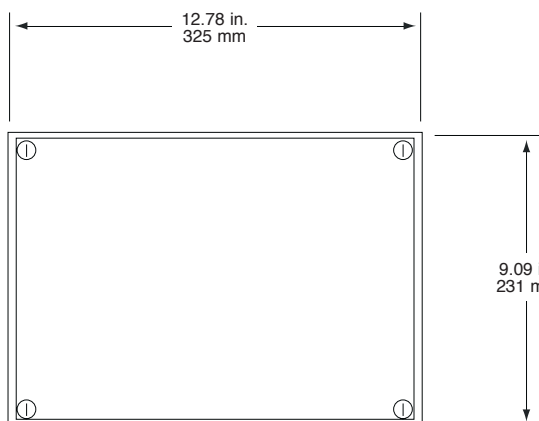


Front view of 8M Enclosure box showing height and width

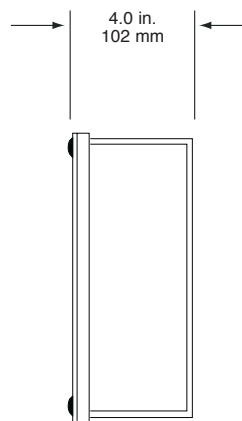


Side view of 8M Enclosure box showing depth

## Square D® Clipsal® 12M Enclosure

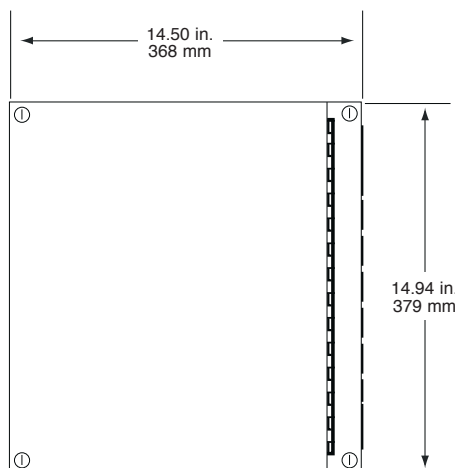


Front view of 12M Enclosure box showing height and width

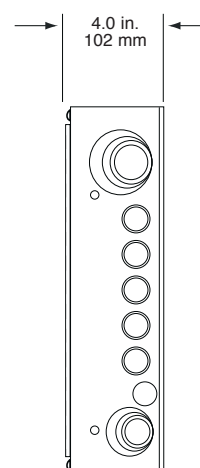


Side view of 12M Enclosure box showing depth

## Square D® Clipsal® 24M Enclosure

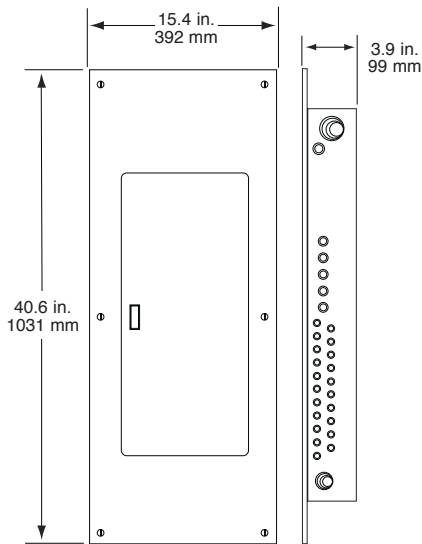


Front view of 24M Enclosure box showing height and width

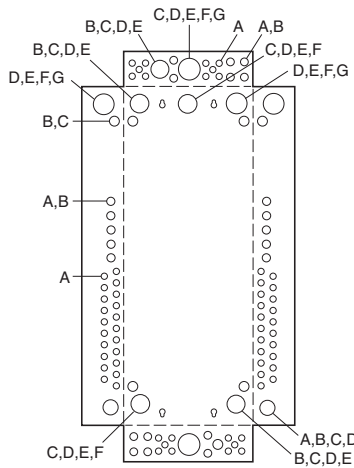


Side view of 24M Enclosure box showing depth

## Square D® Clipsal® 36M Enclosure



Front and side view (flush mount)

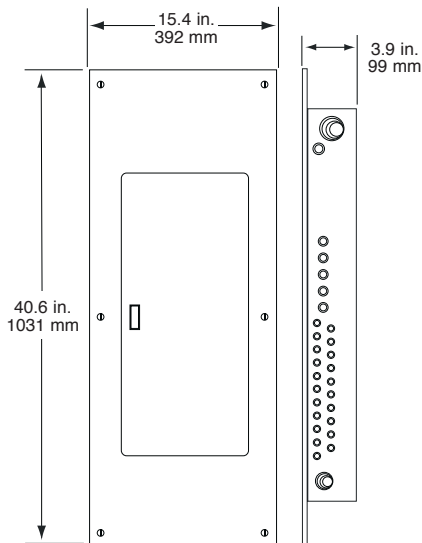


Knockouts

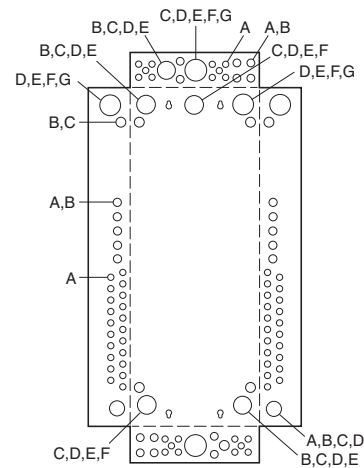
### 36M Knockouts

Symbol	Conduit Size	Symbol	Conduit Size
A	1/2	E	1 1/2
B	3/4	F	2
C	1	G	2 1/2
D	1 1/4		

## Square D® Clipsal® 60M Enclosure



Front and side view (flush mount)



Knockouts

### 60M Knockouts

Symbol	Conduit Size	Symbol	Conduit Size
A	1/2	E	1 1/2
B	3/4	F	2
C	1	G	2 1/2
D	1 1/4		

Square D<sup>®</sup>  
Clipsal<sup>®</sup>  
Multi Room Audio





## Introduction to Square D® Clipsal® Multi Room Audio

The Square D® Multi Room Audio offer provides audio distribution and control throughout an entire home - or just one room if desired - and seamlessly integrates into the Square D Clipsal® lighting control system to form one simple, reliable control system.

The most common method of control for both the Square D Clipsal lighting control system and new Multi Room Audio is via wall-mounted keypads, such as the Neo™ and Saturn™, and either a black-and-white or color touchscreen. When incorporated into a Square D Clipsal system, these wall-mounted devices provide a stylish, modern alternative to the standard look of electrical wall switches. Square D Clipsal Saturn or Neo keypads with Dynamic Labeling Technology (DLT™) can control up to eight functions from a single keypad, including lighting or audio controls. The Remote Amplifiers are controlled entirely by the input devices, and have no controls on their front panel. Also available is an optional Audio Distribution Unit, which allows a single stereo audio input to be added to the digital input of the Matrix Switcher. It also allows one distributable stereo audio input to be plugged into the Amplifiers when no Matrix Switcher is used (when Amplifiers are used in stand-alone mode).

A typical Multi Room Audio system distributes up to four analog audio inputs, five if an Audio Distribution Unit is used, and one optical input. These inputs are distributed to up to 8 zones, each consisting of one or more amplifier. Additionally, each amplifier is capable of accepting a local analog audio input, providing up to seven stereo audio channels for each amplifier.

# Square D® Clipsal® Matrix Switcher

The Square D® Clipsal® Audio Matrix Switcher provides a revolutionary means for distributing audio throughout a home. This Matrix Switcher provides up to eight zones of audio output from four source inputs. Audio sources can be switched via the front panel or by any Clipsal input device such as touch screen keypads.

The matrix switcher is ideally suited for multi-room audio and structured wiring systems. Keypads and other Clipsal devices connect to the matrix switcher with CAT-5 modular jacks. Outputs to remote and desktop amplifiers are made with low voltage wiring.

In addition to the six source inputs, two mono broadcast annunciation inputs are provided for connection to intercoms or other systems. Broadcast annunciation input can be given priority over other source inputs and feature fully adjustment volume and over-stepping mute features.



Audio Matrix Switcher

## TECHNICAL INFORMATION

Supply Voltage	<b>120V AC</b>
Line Frequency Range	<b>47 to 53 Hz and 57 to 63 Hz</b>
AC Input Impedance	<b>47 kΩ</b>
Power Consumption	<b>200 W maximum</b>
C-Bus™ Output Voltage	<b>36Vdc maximum</b>
C-Bus Output Current	<b>≤ 330 mA DA Conversion</b>
Network Clock/Burden	<b>Software selectable</b>
Analogue Input Signal Level (source inputs)	<b>2.8V p-p maximum (47 kΩ)</b>
A/D Conversion	<b>16 Bit PCM</b>
Operating Temperature	<b>50 - 104°F (10 to 40°C)</b>
Operating Humidity Range	<b>10 to 90% RH, non-condensing</b>
Standards	<b>UL60065 - Audio, Video, and Similar Electronic Apparatus - Safety Requirements</b>

## SYSTEM AUDIO PERFORMANCE

Parameter	<b>Matrix Switcher + Amplifier</b>
Frequency Response	<b>40 Hz to 20 kHz (+ 2.4/-0.75 dB)</b>
Total Harmonic Distortion	<b>0.16% (1 kHz, 20 W RMS into 4 ohms)</b>
Signal to Noise Ratio	<b>&gt; 63 dB (peak, unweighted)</b>
Input/Outputs	
Infrared Outputs	<b>(2) 3.5 mm sockets to connect to IR Emitter Leads</b>
Mono Broadcast Inputs	<b>(2)</b>
USB (Type B)	<b>(1) To configure Matrix Switcher</b>
Digital Optical Output	<b>(1)</b>
Digital Optical Output	<b>(1) Digital audio format must be 44.1 or 48 kHz stereo. Some formats (such as surround sound) are not compatible with the Matrix Switcher</b>
Optical Inputs	<b>(1)</b>
Digital Zone Outputs	<b>(8)</b>
Digital Audio Input	<b>(1)</b>
Stereo Analog Inputs	<b>(4) RCA pairs</b>
Mono Level Adjustment	<b>(2)</b>

\*For Diagram see technical section page 99

## PRODUCT FEATURES

- Fully digital noise-free audio reproduction
- Stereo analog inputs (4 X RCA pairs)
- Two mono broadcast annunciation inputs
- One digital, one optical
- Voice annunciation of channel changes (configurable)
- One fiber optic SPDIF input (digital audio compatible)
- One custom digital input for cascading on multiple matrix switchers
- Eight stereo zone outputs (45m of ea. star wired output)
- Cat-5 cable jack for connection to C-Bus™ network
- Reticulated IR support
- User interface LCD display and switches
- Integral C-Bus PC serial interface for connection to personal computers
- Integral power supply for remote amplifiers
- Configurable through serial or USB connections

## DISTRIBUTED INTELLIGENCE

- Compatible with C-Bus devices

CATALOG NUMBER	DESCRIPTION
SLC560884T	Matrix Switcher

# Square D® Clipsal® Multi-Room Amplifiers

Square D® Clipsal® Multi Room Amplifiers provide efficient, high fidelity audio to individual rooms. Available in either desktop or remote mount versions, these amplifiers are specifically designed to operate on the C-Bus™ network as an extension of the lighting control system, without third party gateways or custom integration. This means the ability to control amplifiers with the same keypad or touch screen used to control lighting levels.

When combined with the Clipsal Matrix Switcher (part SLC560884T), these amplifiers deliver excellent stereo sound at 10 Watts without a separate power supply. When furnished with optional power supply these amplifiers provide 25 Watts. Connections are provided for up to two sets of 8 ohm speakers.

Both desktop and remote amplifiers provide a local input connection for attaching to CD or mp3 players, etc. In addition, the desktop amplifier will accept remote commands via its infrared receiver. Infrared remote included.



Desktop Audio Amplifier



Remote Mounted Audio Amplifier

## TECHNICAL INFORMATION

Supply Voltage	<b>27Vdc (powered by Matrix Switcher via digital audio connection), and/or 24Vdc @ 3.75 A (via external switch mode power supply) or 21Vac @ 3.5 A (via external linear power supply)</b>
C-Bus™ Supply Voltage	<b>15 to 36Vdc @ 22 mA</b>
Power Consumption	<b>90 W maximum</b>
Network Clock and Burden	<b>Software selectable</b>
Analog Input Signal Level (source inputs)	<b>2.8V p-p maximum (47 kΩ)</b>
DA Conversion	<b>16 Bit PCM</b>
Maximum Power Output	<b>28 W RMS into 4Ω (0.514% THD)</b>
Frequency Response	<b>40Hz to 20 kHz (+ 1 dB)</b>
Total Harmonic Distortion (1 kHz, 20 W RMS into 4 ohms)	<b>0.36% (using analog input)</b>
Signal to Noise Ratio	<b>&gt; 67 dB (peak, unweighted)</b>
Operating Temperature	<b>Desktop Amp: 50 - 104° F (10 to 40° C) Remote Amp: 50 - 158° F (10 to 70° C)</b>
Operating Humidity Range	<b>0 - 95% RH, non-condensing</b>
Standards	<b>UL60065 - Audio, Video, and Similar Electronic Apparatus - Safety Requirements</b>

## SYSTEM AUDIO PERFORMANCE

Parameter	Matrix Switcher + Amplifier	Distribution Unit + Amplifier
Frequency Response	<b>40Hz to 20 kHz (+ 2.4/-0.75 dB)</b>	<b>40Hz to 20 kHz (+ 2.3 dB)</b>
Total Harmonic Distortion (1 kHz, 20 W RMS into 4 ohms)	<b>0.16%</b>	<b>0.20%</b>
Signal to Noise Ratio	<b>&gt; 63 dB (peak, unweighted)</b>	

\*For Diagram see technical section page 99

## PRODUCT FEATURES

- 10 Watt digital efficient stereo amplifier, 25 Watts when connected to local power supply (optional)
- Super quiet design
- On board 8 ohm loudspeaker connections
- Local source input - RCA jack
- C-Bus connection (connects with CAT-5 cable)
- Volume control (desktop model)
- On-board IR receiver (desktop model)
- Stereo headphone connection (desktop model)
- Infrared remote included (desktop model only)

## DISTRIBUTED INTELLIGENCE

- Compatible with C-Bus devices

CATALOG NUMBER	DESCRIPTION
<b>SLC560125D</b>	Desktop Amplifier
<b>SLC560125R</b>	Remote Amplifier
<b>SLC5600P243750T</b>	Audio Amplifier Power Supply
<b>SLC561205MB</b>	Remote Amplifier Mounting Bracket

# Square D® Clipsal® Audio Distribution Unit

The Square D® Clipsal® Audio Distribution Unit is an optional device that can be used in conjunction with the C-Bus™ Multi Room Audio System to further enhance Clipsal's C-Bus enabled audio product family.

The Clipsal Audio Distribution Unit distributes a single digitized stereo audio input source to multiple locations via amplifiers wired in a parallel format. Functions such as Volume, Bass, Treble and Balance can be adjusted from a C-Bus input device at any of the audio output locations.

The Clipsal Audio Distribution Unit converts a single analog stereo audio input to a digital audio output. That output can then be connected to the Matrix Switcher as an additional input or to the Clipsal Desktop or Remote Amplifier as a stand-alone configuration.



Audio Distribution Unit

## TECHNICAL INFORMATION

Supply Voltage	<b>27Vdc (powered by Amplifier via digital audio connection), or 24Vdc @ 500 mA (via external power pack)</b>
Analog Input Signal Level (audio inputs)	<b>2.8 V p-p maximum (31 k Ω)</b>
Harmonic Distortion	<b>≤ 0.05%</b>
Frequency Response	<b>100 Hz to 20 kHz</b>
Dimensions (WxHxD)	<b>6.52 in. x 1.97 in. x 1.2 in. (165.5mm x 50mm x 30mm)</b>
IR Port	<b>Yes</b>
A/D Conversion	<b>16 bit PCM</b>
Operating Temperature	<b>50-104°F (10-40°C)</b>
Operating Humidity	<b>90% RH (non-condensing)</b>
Standard	<b>UL Listed 60065 Audio, Video and Similar Electronic Apparatus - Safety Requirements</b>

\*For Diagram see technical section page 100

## PRODUCT FEATURES

- Distributes a single stereo audio source to C-Bus Audio Amplifiers via a digitized signal over Cat-5 cable
- Does not require any C-Bus programming (hardware only)
- One stereo analog audio source input (2 X RCA)
- One digital audio output
- Output can be looped between C-Bus Audio Amplifiers
- IR emitter port

CATALOG NUMBER	DESCRIPTION
<b>SLC560011</b>	Audio Distribution Unit
<b>SLC5600P24500S</b>	Amp External Power Supply (only needed if Audio distribution unit is used to provide an additional digital input for the Matrix Switcher)

# Square D® Clipsal® Universal Remote

The Square D® Clipsal® Universal Remote is a digital universal remote control that is easy to use, allowing control of electronic devices that are equipped with an infrared remote.

The Square D Clipsal Universal Remote can control up to 16 devices, including C-Bus™ devices, DVDs, TVs, VCRs and satellite receivers.

The remote is easily configured by using either automatic code detection or the learn option. In addition, the advanced macro function allows the recording of a chain of up to 60 commands with the single touch of a button.



Universal Remote Control

## TECHNICAL INFORMATION

LCD Screen	<b>1.6 in. (W) x 3.6 in. (H)</b>
Backlighting	<b>Brilliant blue LED</b>
Learning Frequency	<b>20 kHz to 455 kHz &amp; pulse</b>
Memory	<b>512 kB flash memory</b>
Batteries	<b>Uses 4 (AAA) alkaline batteries (not included)</b>
Touch Screen Soft Keys	<b>42 keys</b>
Rubber Hard Buttons	<b>20 buttons</b>
Power Consumption	<b>LCD Off: 35 µA LCD On: 420 µA Operation: 30-150 mA (Max)</b>
Operating Distance	<b>Approx. 32 feet</b>
Dimensions	<b>2.4 in. (W) x 8.3 in. (H) x 1.0 in. (D) [61 mm (W) x 210 mm (H) x 25 mm (D)]</b>
Weight (w/o batteries)	<b>5.3 oz (150 g)</b>

*\*For Diagram see technical section page 100*

## PRODUCT FEATURES

- Large touch screen display with LED backlight
- Macro function (up to 60 commands per macro)
- Learns infrared codes from original equipment remote controls
- User programmable buttons for each device
- Pre-programmed manufacturer's codes
- Multiple timers (day of week, date and "alarm") to automate functions (i.e., record movies, turn on music)
- Quick channel buttons
- Favorite channels grouping
- Built in motion detector
- System set-up transmission
- Sleep mode

## DISTRIBUTED INTELLIGENCE

- Compatible with C-Bus Devices

CATALOG NUMBER	DESCRIPTION
SLC503OURC	Universal Remote Control

# Square D® Clipsal® Audio Speakers

Square D® Clipsal® Audio Speakers are available as indoor or outdoor models and are designed to be used with home theater, multi-room, and outdoor audio applications that will accept 8 Ohm speakers, such as the Square D Clipsal Multi-Room Audio (MRA) system.

The indoor speakers come in wall- or ceiling-mount versions that are installed with the front of the speaker flush with the mounting surface.

The indoor/outdoor speakers can be placed on a shelf or hung on a surface by using the included bracket.



Indoor Speakers



Outdoor Speakers

## CLIPSAL INDOOR AUDIO SPEAKERS

Installation	<b>Ceiling Mount or Wall Mount</b>
Speaker Dimensions	<b>Ceiling Mount - 9.45 in. (Dia) x 3.125 in. (D) (240 mm x 79.38 mm) Wall Mount - 12.125 in. (H) x 8.7 in. (W) x 3.125 in. (D) (308 mm x 221 mm x 79 mm)</b>
Speaker Diameter	<b>Ceiling Mount - 6.0 in. (152 mm) Wall Mount - 6.0 in. (152 mm)</b>
Weight	<b>Ceiling Mount - 3.31 lb. Wall Mount - (1.5 kg) 3.31 lb. (1.5 kg)</b>
Material	<b>Kevlar®**, Polypropylene*</b>
<b>Operating Environment</b>	
Temperature	<b>Ceiling Mount: -13°F - 158°F (-25°C - 70°C) Wall Mount: -13°F - 158°F (-25°C - 70°C)</b>
Relative Humidity	<b>20 - 90% noncondensing</b>
<b>Audio Performance</b>	
Frequency Response	<b>Ceiling Mount - 48 Hz-20 kHz, 58 Hz-20 kHz Wall Mount- 65 Hz-20 kHz, 58 Hz-20 kHz</b>
Power Rating	<b>60 W RMS</b>
Impedance	<b>8 Ohm</b>
Sensitivity	<b>48 Hz-20 kHz, 58 Hz-20 kHz: 90 dB 65 Hz-20 kHz: 91 dB 58 Hz-20 kHz: 88 dB</b>

\*\*Kevlar® drivers have a fourth order 24/24 dB crossover for both tweeter and woofer

\*Polypropylene drivers have a second order 12/12 dB crossover for both tweeter and woofer

## CLIPSAL OUTDOOR AUDIO SPEAKERS

Installation	<b>Indoor, outdoor, shelf</b>
Overall Dimensions	<b>9.8 in. (H) x 6.75 in. (W/front) x 2.75 in. (W/rear) x 6 in. (D) [248.9 mm (H) x 171.5 mm (W/f) x 69.9 mm (W/r) x 152.4 mm (D)]</b>
Speaker Diameter	<b>4.0 in. (102 mm)</b>
Weight	<b>4.41 lb. (2 kg)</b>
Material	<b>Polypropylene*</b>
<b>Operating Environment</b>	
Temperature	<b>-13°F - 158°F (-25°C - 70°C)</b>
Relative Humidity	<b>20 - 90% noncondensing</b>
<b>Audio Performance</b>	
Frequency Response	<b>70 Hz to 20 kHz</b>
Nominal Power Rating	<b>35 W RMS</b>
Impedance	<b>8 Ohm</b>
Sensitivity	<b>88 dB</b>

\*Polypropylene drivers have a second order 12/12 dB crossover for both tweeter and woofer

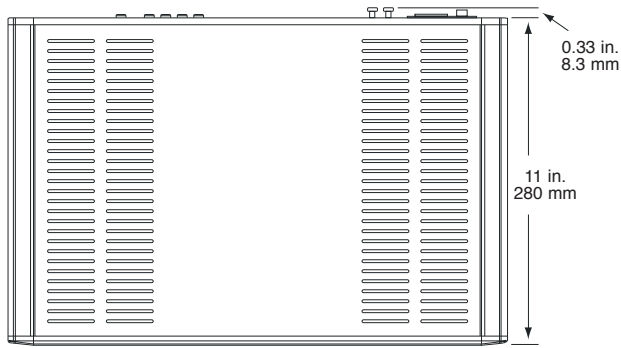
\*For Diagram see technical section page 100

## PRODUCT FEATURES

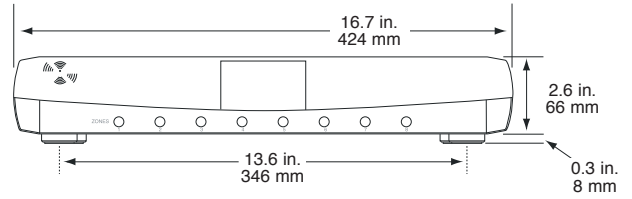
- Flush-mount, shelf-mount, and surface-mount models
- Indoor and outdoor models
- High-impact plastic components and powder coated metal grills produce a long-lasting unit suitable for indoor and outdoor use
- Available with Kevlar® (indoor units only) or polypropylene drivers (indoor and outdoor units) for high-quality sound in all applications
- All models are off the floor, saving floor space
- Convenient and reliable sound coverage, almost completely independent of furniture or entertainment equipment layout
- Indoor/Outdoor Speakers have a pre-installed, removable mounting bracket
- Indoor/Outdoor Speakers can be placed on a shelf or hung from a surface by their bracket (included)
- Tracing/painting template included

CATALOG NUMBER	DESCRIPTION
<b>SLC5600IWP</b>	In-Wall Polypropylene speakers
<b>SLC5600IWK</b>	In-Wall Kevlar speakers
<b>SLC5600ICP</b>	In-Ceiling Polypropylene speakers
<b>SLC5600ICK</b>	In-Ceiling Kevlar speakers
<b>SLC5600DPBK</b>	Outdoor Black speakers
<b>SLC5600DPWE</b>	Outdoor White speakers

## Square D® Clipsal® Matrix Switcher

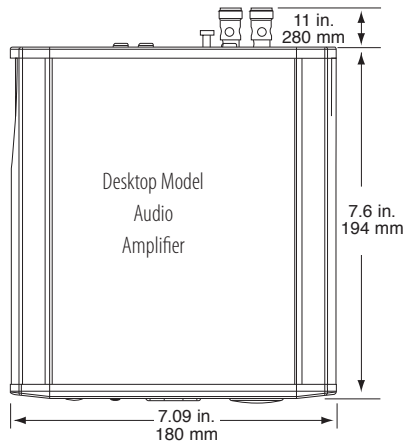


Top View

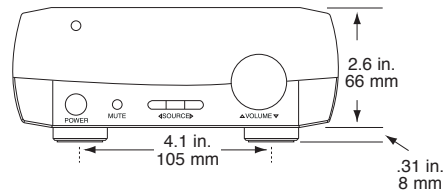


Bottom View

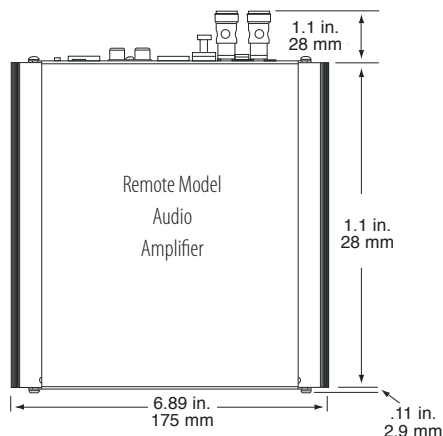
## Square D® Clipsal® Multi-Room Amplifiers



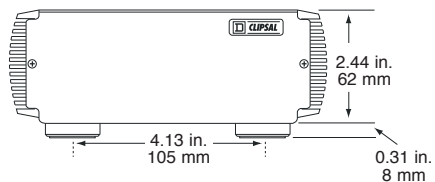
Top View



Front View

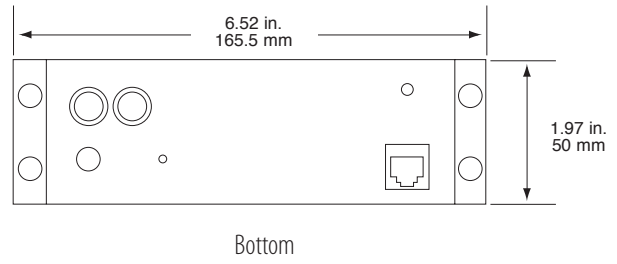
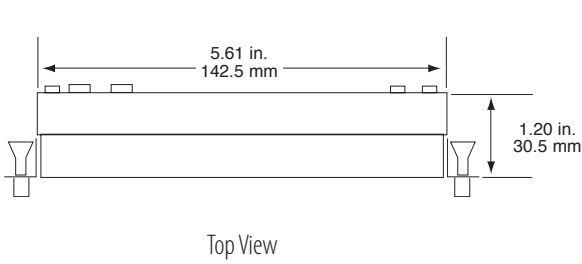


Top View

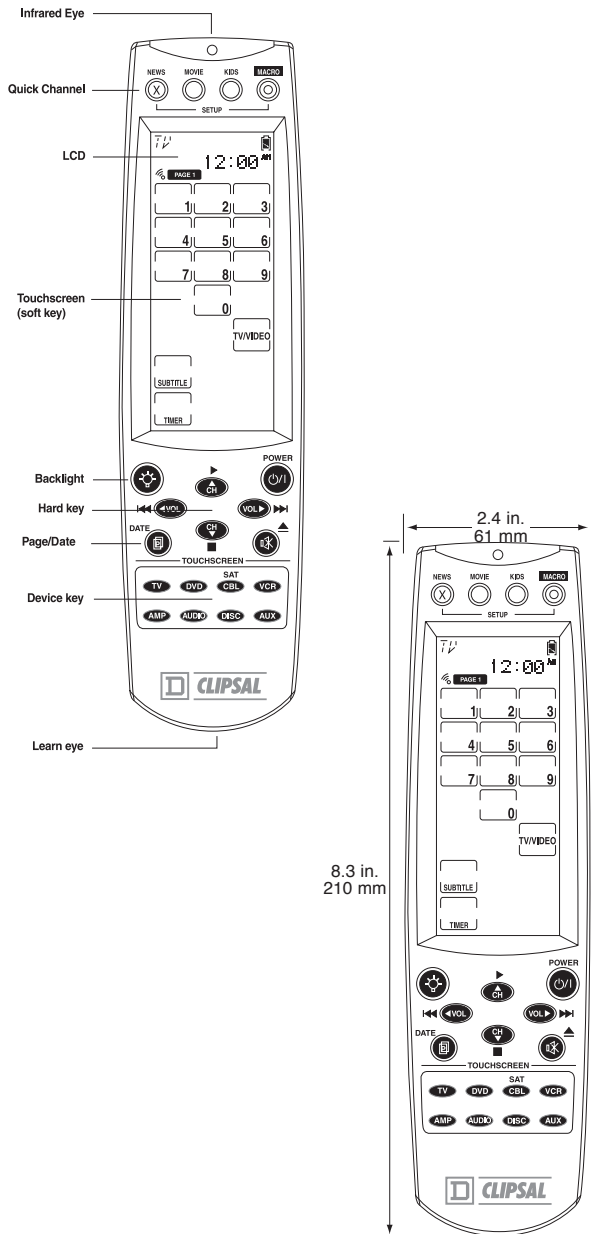


Front View

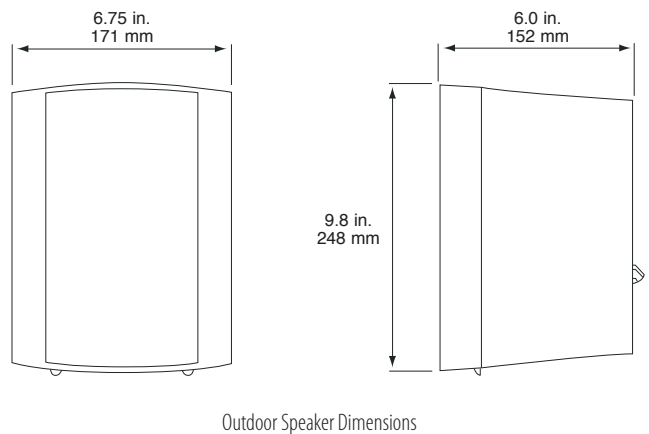
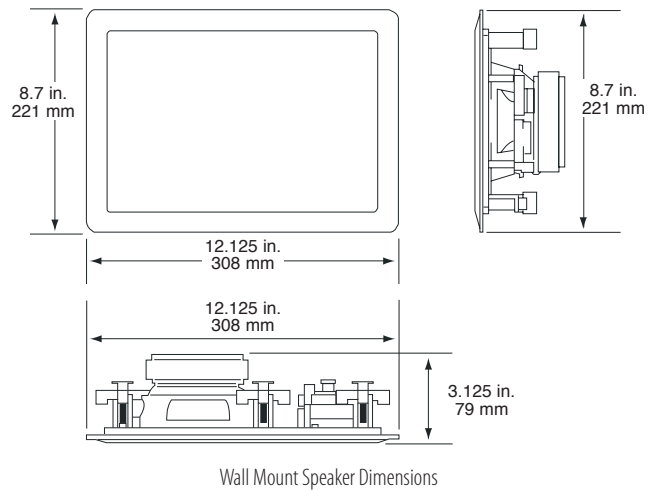
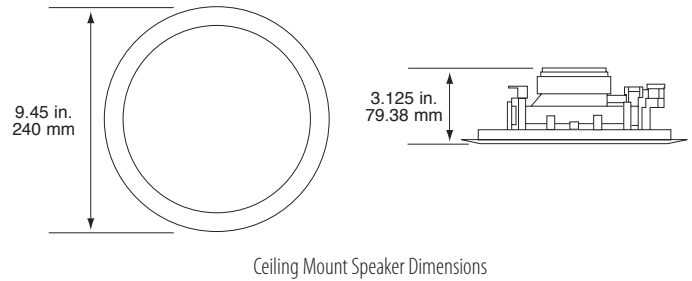
# Square D® Clipsal® Audio Distribution Unit



# Square D® Clipsal® Universal Remote



# Square D® Clipsal® Audio Speakers







Square D<sup>®</sup>  
Clipsal<sup>®</sup>  
Thermostats



## Coming in 2008, Square D® Clipsal® HVAC Single Zone and 4 Zone Controllable Thermostats.

- Control of a wide range of heating/cooling system types including reverse cycle (or 'Heat Pump') systems, fan coil unit systems, hydronic systems and evaporative cooling systems
- Powered from C-Bus™
- Operates as a part of a C-Bus network with information such as set point temperature, current temperature, etc., available to other C-Bus devices (e.g., Touch Screen).
- Temperature set points can be changed from other C-Bus devices and set the thermostats
- Flexible plant control scenarios setup via C-Bus Toolkit software GUI's
- Supports multi-stage Heating/Cooling
- RTC on-board (4 Zone unit only) or can be scheduled from a C-Bus touch screen or logic controller
- Supports multi-speed fan control
- Versions with on-board relays for direct control of the plant from the thermostat or control for remote C-Bus relays connected to the HVAC plant
- Clear, backlit user interface including temperature set point, mode and fan speed adjustment
- Support for setback (or Economy) mode
- Available with white, black or stainless steel face plate
- Automatic heat / cool changeover
- Pulse width modulated control algorithms (variable time based pulse width) for accurate temperature control

# Square D® Clipsal® Single Zone Thermostats



Square D® Clipsal® C-Bus™ wall mounted, Single Zone Thermostats include support for control of HVAC units via C-Bus or the internal HVAC relays. They also allow the user to manually set the temperature and mode of operation (heating, cooling or ventilation). The easy to use operator interface includes fan speed control, set back or economy mode and an integral LCD to display the current temperature and mode of operation.

- Temperature adjustment from the unit
- A dedicated HVAC controller (via the on-board relays)
- A C-Bus Relay unit
- Mode button, i.e., heating, cooling, ventilation
- Manual fan speed control
- Incorporates 'setback' mode
- Setup via C-Bus Toolkit or from the unit itself
- Broadcasts the displayed temperature on C-Bus



Single Zone Thermostat

# Square D® Clipsal® 4 Zone Thermostats

## Thermostats with Programmable Time Scheduling

Clipsal 4 Zone Thermostats include on board 7-day HVAC time scheduling (user programmable) manual fan speed control, set back mode and an easy to use interface, comprising of an LCD, manual control buttons and a rotating dial with an integral press switch. From the unit, the user can manually adjust the temperature set point, the mode of operation (heating, cooling, ventilation) and time schedules.

- Full 7 day programmable schedule, 4 events per day
- Accepts up to four remote temperature sensor inputs (via C-Bus)
- Four zones plus common (un-switched) zone
- Set and control via other C-Bus devices
- Supports setback temperatures
- Powered from C-Bus
- Backlit LCD and buttons
- Integral temperature sensor
- Manual fan speed control
- Zone button sets the active zones in the system



4 Zone Thermostat



# Design Guide

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# Introduction

Square D® Clipsal® Lighting Control employs C-Bus™ network control for commercial lighting. Compared to conventional control systems, C-Bus network controls reduce installation time, simplify lighting control circuits, save energy and achieve greater functionality. The C-Bus network is a distributed intelligence network control system, incorporating microprocessor-based control. Each C-Bus device features an integral microcontroller to achieve a robust and reliable distributed control system. Once installed, the installer programs the operating variables and control relationships between C-Bus devices on the network. The C-Bus network may be scaled to fit any size project from a single conference room up to a very large building.

## OBJECTIVE

This guide provides lighting control designers with guidance needed to design and plan C-Bus network control systems. Additional support is available through the Square D Lighting Control Technical Support Team at 1-888-SQUARED.

# Capabilities

## DIMMING

Dimming is a critical part of today's lighting control needs. In the past, manual dimming controls were used in offices, conference rooms, and classrooms to allow occupants to adjust light levels to meet the occupant needs or preferences. Now, more sophisticated lighting control systems employ dimming to provide multi-scene control, daylighting control and multi-level control in a variety of spaces and building types, from schools and offices to retail environments and warehouses, to save energy and provide more occupant-friendly control. C-Bus includes a variety of units to achieve continuous or stepped dimming of fluorescent, incandescent and even HID lighting.

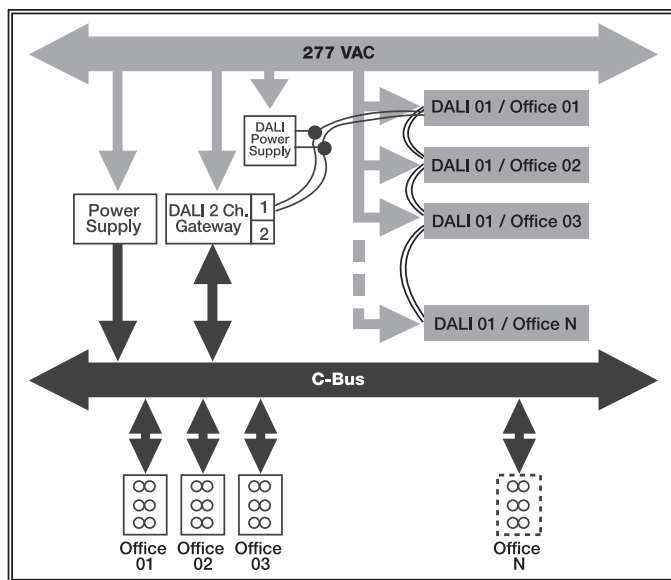


Illustration of DALI Network Control

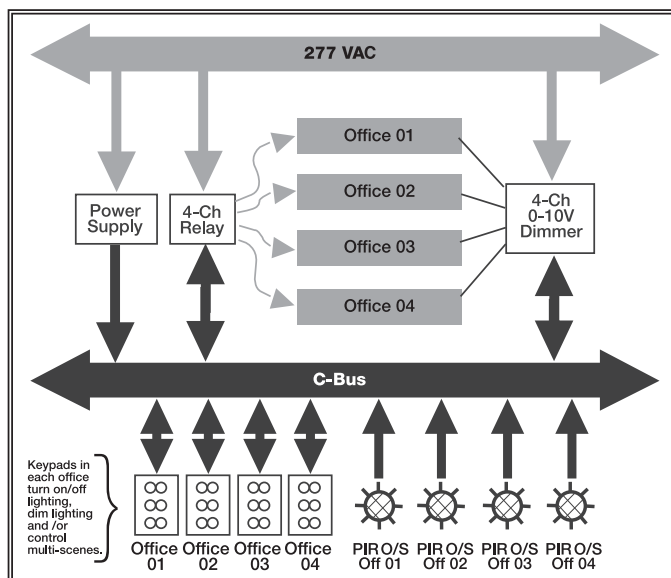


Illustration of 0-10V Dimming



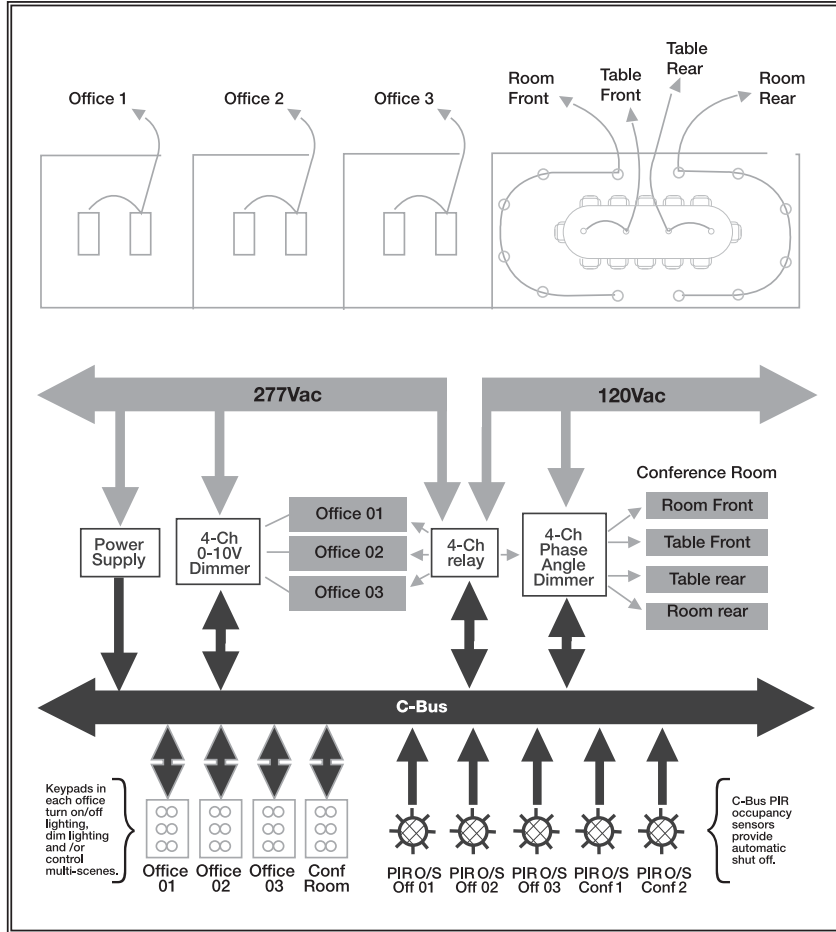
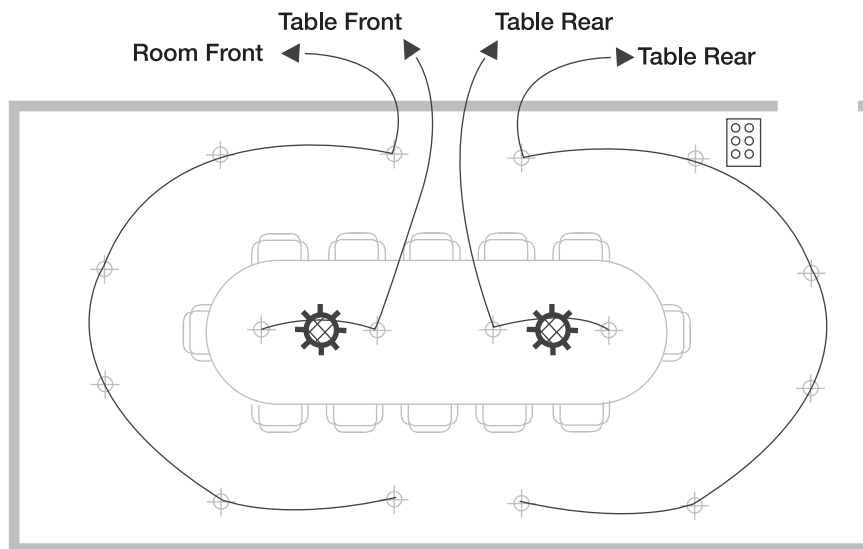


Illustration of Phase Angle Control in Conference Room

**MULTI-SCENE CONTROL**

The press of one button may control many individual loads. Loads may be turned on, off, or dimmed to a predetermined level. Depending on how a space is used, it may be necessary to have certain lights set to various levels for different functions. For example, a conference room may have multiple groups of lighting where one group illuminates the table, another group illuminates the perimeter in the back of the room and another group illuminates the perimeter in the front of the room. During a meeting, it may be desirable to have the lighting over the table set to 100% and have the lighting around the perimeter set to 50%. This could be accomplished with a single button press to create the “meeting” scene. For presentations, perimeter lighting in the front of the room may be turned off, lighting over the table set at 50%, and perimeter lighting in the back of the room set at 50%.



**Multi-Scene Control**

Presentation (scene 1)  
 Room Front = Off  
 Room Rear = 50%  
 Table Front = 50%  
 Table Rear = 50%

Meeting (scene 2)  
 Room Front = 0%  
 Room Rear = 50%  
 Table Front = 100%  
 Table Rear = 100%

Up to (8) scenes with 8-button keypad or DLT

Multi-Scene Control in Conference Room

**DAYLIGHTING CONTROL**

Daylighting control may be used to reduce artificial lighting of interior spaces when those spaces receive adequate natural light from windows or skylights. Daylighting controls are commonly installed in California, where the state's building code, Title 24, requires the use of daylighting controls in daylit spaces. Daylighting control may be used to save energy in schools, offices, warehouses, and even retail spaces. More and more buildings, especially big box retail and schools, are taking advantage of natural sunlight to illuminate interior spaces. C-Bus light level sensors are easily configured to provide daylighting control utilizing relays for stepped dimming function or dimmer units for continuous dimming.

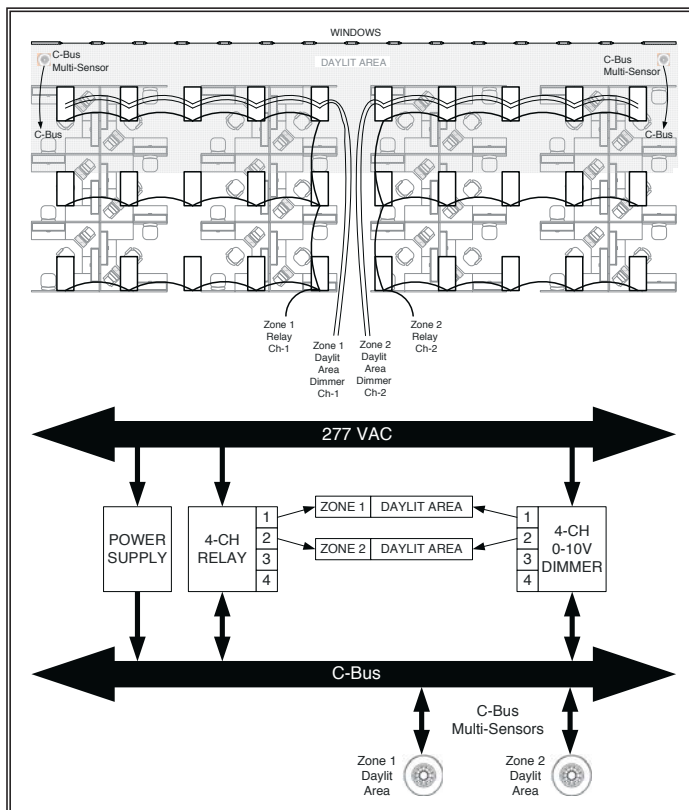


Illustration of Daylighting Control

**C-BUS™ WITH POWERLINK®**

C-Bus networks may be connected to Powerlink G3 intelligent lighting control panels utilizing the Powerlink Device Router and the Powerlink 3000G3C controller. Two-way communications between the C-Bus network and the Powerlink panel allows C-Bus inputs to control branch circuits at the Powerlink panel or override the Powerlink schedule, and the Powerlink panel may provide scheduled shutoff of C-Bus controlled lighting.

In the Daylighting System illustrated no shut off was provided. To shut off lighting on a schedule, connect the C-Bus network to Powerlink 3000G3C controller via Powerlink Device Router. The Device Router includes a C-Bus PCI and Power Supply, and is connected to the Powerlink panel using a serial cable between the RS-232 port on the PCI and the 3000G3C controller.

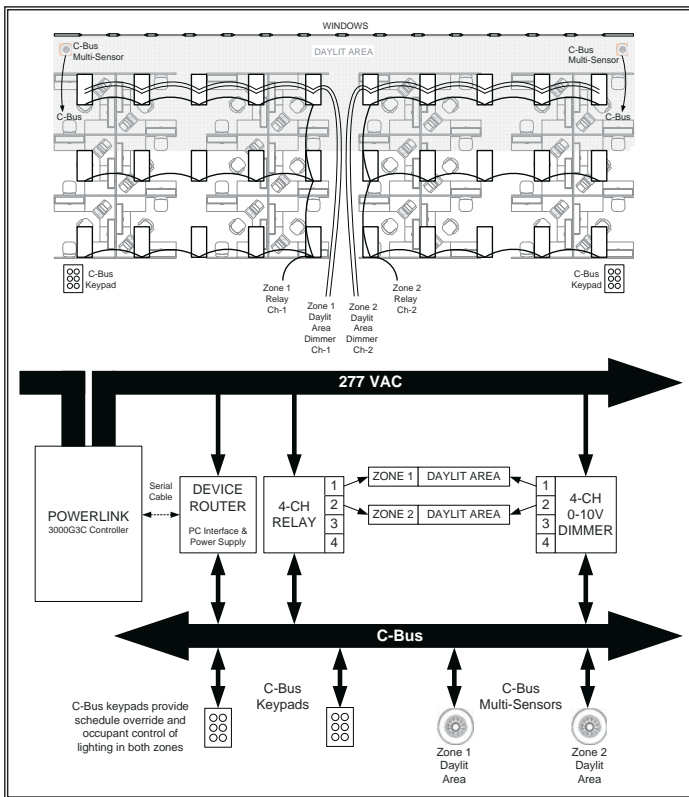


Illustration of C-Bus Connected to Powerlink G3 Panel

# Specifications

## PROGRAMMING PRINCIPLES

All C-Bus™ devices require programming, with the exception of power supplies. Programming is achieved with proprietary software using a PC. Unit programming is performed to achieve the following objectives:

- Create and define units on the C-Bus network
- Identify each unit using the C-Bus addressing convention
- Create, define and edit control relationships between inputs and outputs
- Edit unit operating parameters

The operating parameters vary from unit to unit, depending on its type.

- Keypad Functions
- Timer Functions
- Dimming Functions
- Toggle (on/off) Control
- Preset Levels
- Custom / Other Functions
- Scenes - Multiple location control

- Output Switching Logic Assignments
- Power Outage Recovery Status
- Power Up Sequences
- Dimming Rates
- Indicator Options
- Sensor Switching Conditions
- Override Controls (Enable/Disable)
- Error Status Options

## ADDRESSING CONVENTIONS

Once a preliminary list of hardware requirements has been created, planning of the programming requirements may begin. The C-Bus network uses a simple addressing scheme to identify units, groups, areas and networks. The purpose of each parameter will be discussed in the next section.

### ALPHANUMERIC CHARACTERS

Legal Alphanumeric Character Set: 0-9, a-z, A-Z, ' , ' , \_

All descriptive addresses accept the above legal characters. Other characters may be accepted, but are not recommended. Project Names and Part Names will force capital letters.

### HEXADECIMAL SYMBOLS

Hexadecimal Symbol Set: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

At a physical level, the programming information downloaded to C-Bus™ Units consists of a two digit hexadecimal number, represented by a combination of the above 16 symbols. Valid addresses include 12, AB, FE, 5E. The descriptive addressing is not downloaded. This information is stored in a database on your PC.

A programmed C-Bus network can be scanned using the C-Bus Installation Software. If a Version 7.1 Project Database has not been defined by the user, the software will use the hexadecimal addressing uploaded to represent all unknown addressing.

Users should note that these hexadecimal addresses are automatically assigned. The Project and Topology Managers may be used to reference or manipulate hexadecimal address as required.

### GROUP ADDRESSING

The Group Address is usually related to the load physically connected to the terminal of the output unit. Therefore, the group address should accurately describe the load being controlled. Typically, numerical designators are used to describe lighting circuits. Up to 255 group addresses may be defined on a single network less any defined area addresses.

Valid groups include: Office Lights, Hall Lights, L4-2B, A4-2L-3

The default group is "unused."

PARAMETER	FORMAT	EXAMPLE
PROJECT NAME	8 alphanumeric characters	OFFICE01
NETWORK	20 alphanumeric characters	Office Network
UNIT	Three digit decimal number (000-255) OR Two digit hexadecimal number (00-FF)	016, 067, . . . 145 OR 0A, 1A, . . . 5B
PART NAME	8 alphanumeric characters	RELAY01
APPLICATION	20 alphanumeric characters	Lighting (*)
AREA	20 alphanumeric characters	First Floor Offices
GROUP	20 alphanumeric characters	Conference Rm Lights

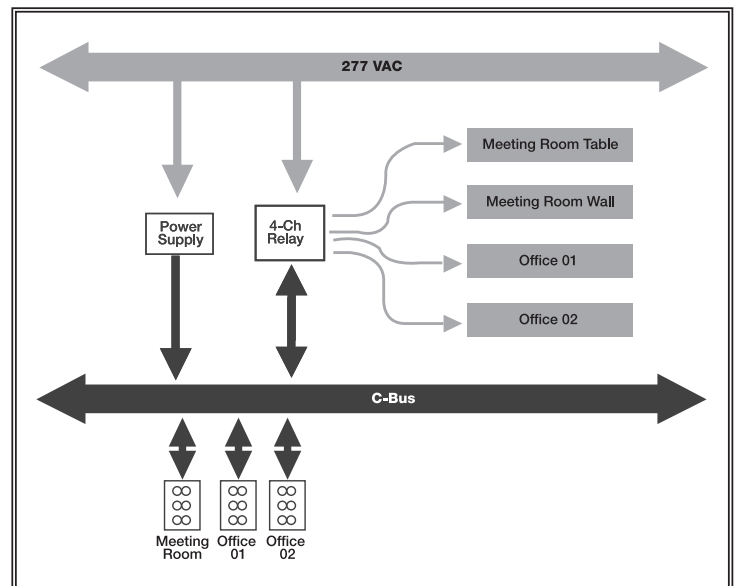


Illustration of Group Addressing

**AREA ADDRESSING**

The area address is a convenient method of addressing multiple output channels collectively. Large areas consisting of many C-Bus™ output units may be controlled from a single point on the C-Bus network. The area address is used in the group address field to achieve control.

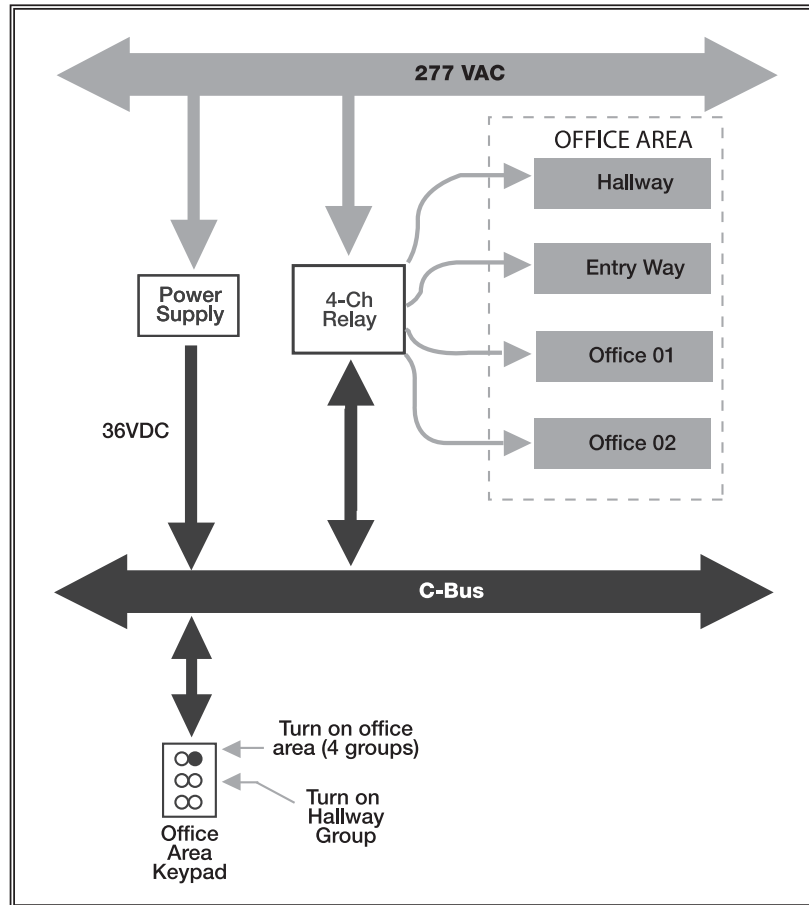


Illustration of Area Addressing

Each C-Bus input and output device in a control area must be assigned the same area address. The area address must be unique and must not be repeated as a group address in that C-Bus network. Up to 255 areas may be defined less the number of defined groups.

Area address status is not included in the status report. Therefore, C-Bus input devices will follow the status of group address of output devices associated with the input device after approximately five times the status request interval (approx. 15 seconds).

**APPLICATION ADDRESSING**

Applications are used to divide the C-Bus™ network into independent functional systems. All group addresses in any unit are associated with that unit’s applications, and commands issued by a C-Bus input device will affect only output devices with matching applications and group addresses.

Up to 255 application addresses may be used on a single C-Bus network. By default, two applications have been defined: Lighting and Heating. Other applications may be defined as needed. For example, in a multi-storied building it may be desirable to have a separate application for each floor to satisfy the need to have more than 255 group addresses on the network, or to allow the same group addresses to be used over and over (e.g. OFFICE01, MENS01, CONF01, etc.). In this case, defined applications might be Lighting01, Lighting02, etc.

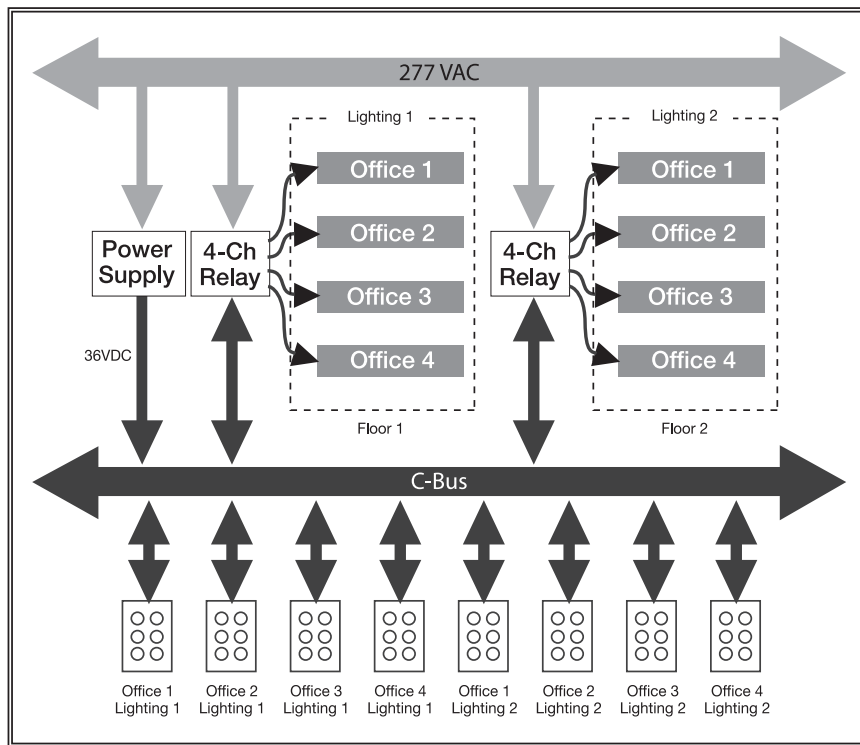
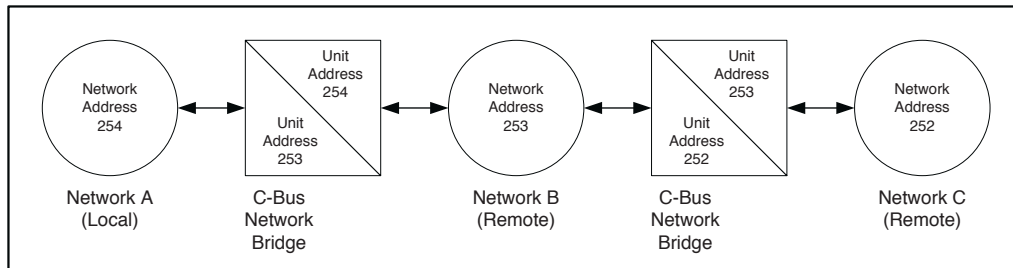


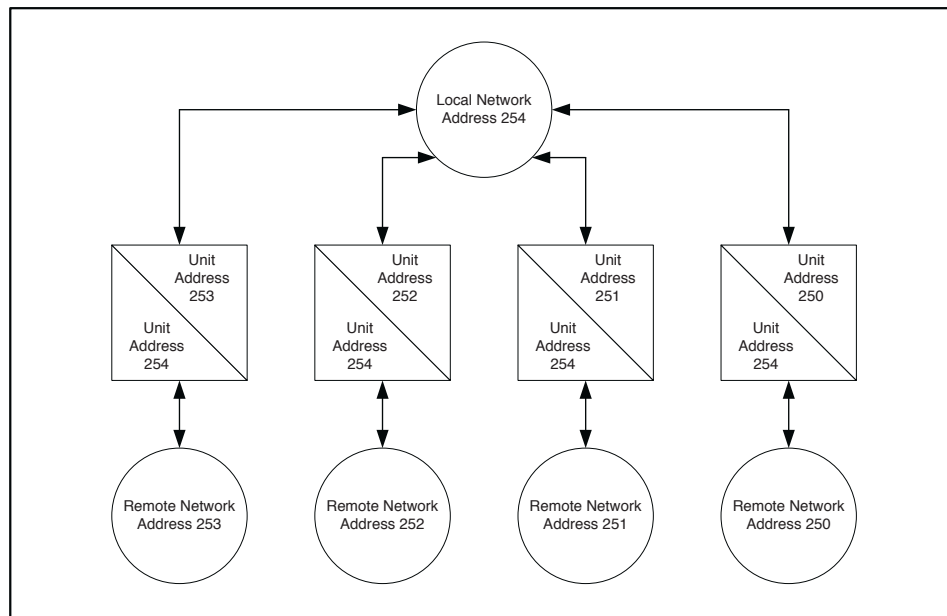
Illustration of Application Addressing;  
Where Lighting 1 and Lighting 2 are Separate Applications

**NETWORK ADDRESSING**

The network address is used to identify networks in a multi-network system. Each C-Bus network may be connected to other C-Bus networks using a C-Bus Network Bridge. The C-Bus Network Bridge facilitates communications across networks, allowing device on one C-Bus network to issue commands to devices on another C-Bus network.



Multiple C-Bus networks connected in series using C-Bus Network Bridges



Multiple remote C-Bus networks connected to local network using star topology.

The default network name is “Local Network” and has a network address of 254. Examples of valid network names are “First Floor”, “My House”, “Movie Theatre” or “Building 12A.” Up to 255 unique networks may be connected together using C-Bus Network Bridges as shown.

For large installations where real time response is required from a central control, a C-Bus Ethernet Network Interface may be used to connect multiple C-Bus networks together using a common Ethernet backbone. The C-Bus Ethernet Network Interface is a 10 Base T Ethernet compliant device.

**C-BUS™ WIRING RULES**

Square D® Clipsal® incorporates a distributed intelligence lighting control system that employs a low voltage network of intelligent input, output and network communication units to control line rated loads. C-Bus network communications is achieved using proprietary C-Bus protocol over an unshielded twisted pair LAN cable (Cat-5 UTP). Some simple rules should be observed when specifying or designing a Square D Clipsal lighting control system.

**NETWORK TOPOLOGY**

The Square D Clipsal lighting control system is comprised of C-Bus devices interconnected using Cat-5 UTP cable to achieve a topology-free C-Bus network. The lighting control system may incorporate a single network or multiple networks to overcome the following C-Bus network limitations:

- Maximum cable length
- Addressing limitations
- Maximum 2A/36VDC per network
- Reduce network response time (reduce local communications traffic)
- Accommodate physical layout and building structure (network/floor)

When connecting multiple networks together, the following guidelines should be observed:

- Minimize the depth of the network topology for faster, more efficient communications.
- Distribute C-Bus Units on separate networks proportionally to avoid communications and power supply problems. For example if 120 C-Bus Units are required, split into two networks of 60 Units each, rather than 100 Units on the first network and 20 Units on the second.

**NETWORK SIZE**

The maximum number of C-Bus units on any network shall not exceed 100 units. If the lighting control system requires more than 100 units, an additional network may be connected to the first network through a C-Bus Network Bridge to allow communications between networks.

- Maximum of 100 C-Bus units per network • Maximum of 255 networks per system

**NETWORK CABLE**

Maximum cable length is determined by the impedance of the cable used. The resistive and capacitive impedance of network cable varies based on type. For Cat-5 UTP, the maximum length for reliable communications is 3280 ft.

- Maximum 3280 ft. of Cat-5 UTP cable per network
- C-Bus Network Bridges should be used to split a network into two or more networks when the total cable length required exceeds 3280 ft.

**POWER SUPPLIES**

The C-Bus Power Supply and Output units with integral power supply provide low voltage power to C-Bus devices on the network (36VDC). Current required to operate C-Bus devices varies, depending on the device. Refer to installation instructions for specific C-Bus devices to determine current requirements. Each C-Bus Power Supply supplies up to 350mA and C-Bus Output units with integral power supply will supply up to 200mA. Additional C-Bus Power Supplies may be added to maintain optimum network voltage of 15-36VDC. Distribute power supplies evenly on the network to evenly distribute voltage drop. All power supplies on a C-Bus network evenly share the network load. Typically, no more than (5) Power Supplies should be connected to a single network. When utilizing Output Units with an integral power supply rated at 200mA, a maximum of (10) power supplies is allowed. In no case shall the total available power exceed 2A at 36VDC.

**NETWORK BURDEN**

A Network Burden must be connected to a C-Bus network to achieve reliable network communications. The Network Burden is comprised of a capacitor in series with a resistor. One hardware Network Burden is included with each PC Interface (PCI) and two hardware Network Burdens are included with each Network Bridge. The Network Burden may be software enabled on most other DIN rail mounted C-Bus units. One, and only one, Network Burden is required for each C-Bus network. If more than one PCI or Network Bridge is used in a network, all but one Network Burden should be disabled. For systems with multiple networks connected together via Network Bridges, each network within the system should have only one Network Burden connected or enabled.

**SYSTEM CLOCK**

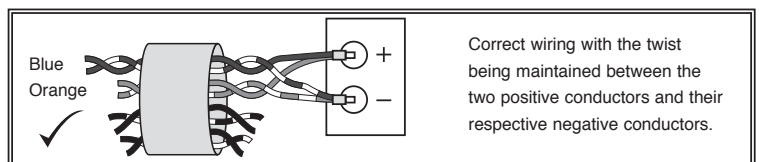
The C-Bus™ network requires one system clock source to operate. This is not a real time clock; however, network communications are synchronized to this source. The PCI and Network Bridge units may be used to provide the system clock. If more than one of these units is present on a network, the network automatically determines which is active. A maximum of 3 network clocks should be enabled on a C-Bus network.

**CONNECTING TO THE C-BUS NETWORK**

The C-Bus network is designed to operate at 36VDC. The C-Bus network is optically and/or galvanically isolated from line voltage rated circuits. When installing C-Bus devices the installer should always follow applicable NEC requirements for Class 2 wiring.

Operating at a low voltage of 36VDC allows electrical work to be performed on the C-Bus side of the system while the system is powered on. Before working on C-Bus network wiring or devices located in enclosures where Class 1 wiring is present, turn off power to Class 1 circuits. The C-Bus network is short circuit protected to prevent damage to C-Bus devices if a short occurs. The C-Bus network will not work as long as the network is shorted. C-Bus devices are connected in parallel on the network. Whether the devices are connected using a daisy-chain topology, a star topology, or a combination of both topologies, the devices are always connected to the network in parallel to achieve a topology-free network. Homeruns are not recommended for C-Bus networks.

When connecting C-Bus devices to the network cable (typically Cat-5 UTP), care should be taken to observe polarity requirements clearly marked on each device. It is recommended that installers use a Cat-5 UTP cable with a distinguishable color, such as pink, to distinguish C-Bus network cable from other network cable which may be present. This simplifies later servicing of the system by allowing service personnel to quickly identify C-Bus network cables.



Cat-5 UTP Cable Termination

# Planning & Design

The most important phase of any Square D® Clipsal® lighting control project is the planning and design phase. A complete plan starts with a good understanding of the lighting control requirements. To determine what is required, start by asking the right questions.

## 1. WHERE IS LIGHTING CONTROL REQUIRED?

For example, a school may have both exterior and interior lighting that requires control. Define the exterior and interior lighting that requires control, and segregate lighting by space.

## 2. HOW IS EACH SPACE USED?

Private offices within a building may share the same lighting control needs. Meeting and training rooms may have the same lighting control needs, regardless of where these spaces fall within in a building. Functionally, a classroom differs from a restroom, so the entire site, including interior and exterior spaces, should be segregated based on the way the space is used. Similarly used spaces may share basic lighting control needs.

## 3. HOW WILL OCCUPANTS WANT TO CONTROL LIGHTING TO BEST UTILIZE THE SPACE?

Consider the needs of the occupant. For example, multi-scene control may be used in classrooms, conference rooms and training rooms. Restrooms, employee break rooms, copier/mail rooms and utility closets may only require occupancy-based control. Exterior parking lot and pathway lighting that is only needed at night may turn on and off based on time of day or sunrise and sunset. Private offices may require multi-scene of dimming controls, while open office areas may turn on and off with time of day schedule. While lighting control should save money, it should also enhance the functionality of the space.

## 4. WHAT TYPE OF LIGHTING IS TO BE CONTROLLED?

If dimming is required, the type of lighting must be considered when selecting a dimmer.

## 5. WHEN IS LIGHTING USED?

This is important. During working hours, lighting may be used differently than during cleaning hours, for example. Consider the lighting use on weekends and after hours. Lighting may not be used during holidays, so it is important to define when lighting control will be needed giving consideration to holidays, inventory, shutdown and other events that may occur only once per year.

## 6. IS OCCUPANCY PREDICTABLE?

If an area has predictable days and hours of occupancy, it may be best to use a time of day schedule to control lighting in this area. For areas with less predictable occupancy patterns, occupancy-based control may be required, or a combination of control schemes may best meet the functional needs of occupants and the energy efficiency needs of building owner. Having a clear understanding of the occupancy patterns of the building will help the designer develop a lighting control system that is convenient for occupants and achieves energy efficiency.

## 7. WHAT ARE THE ENERGY CODE REQUIREMENTS?

Depending on the energy codes governing a particular building, based on its use, its location, and size, there may be specific requirements for lighting control. Understanding the functional requirements as defined by the governing energy code is essential in the planning and design phase. Oversights at this point could result in costly changes later to bring lighting and lighting control systems into compliance with building codes. In most energy codes, lighting and lighting control requirements are intermingled, with some codes providing prescriptive lighting control requirements to bring otherwise non-complying lighting systems into compliance.

## 8. WHAT ARE THE FUNCTIONAL LIGHTING CONTROL REQUIREMENTS FOR EACH SPACE?

At this point in the planning process, start defining the functional lighting control needs for each space. This will aid the designer in the product selection process. Keep in mind that spaces that are used in similar ways may have similar or identical lighting control needs. Grouping spaces based on use may simplify this process. Lighting functions to consider are:

- Dimming or switching
- Manual or automatic
- Schedule-based shutoff or occupancy-based shutoff
- Multi-scene or manual dimming control
- Manual or automatic daylighting control
- Zones or groups

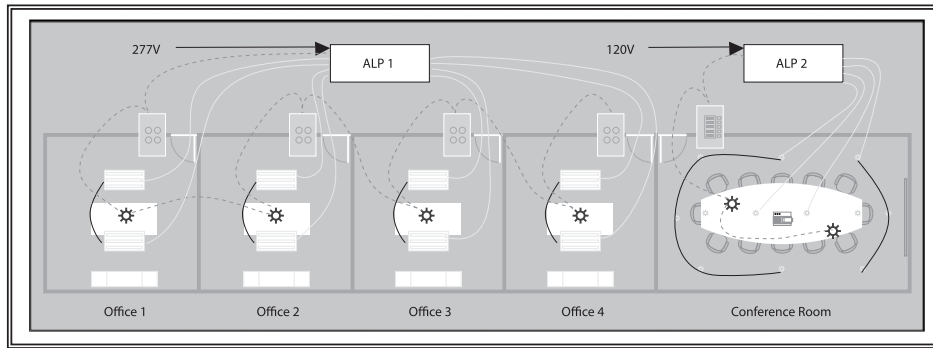
## 9. FINALLY, WHAT CONTROL FUNCTIONS ARE NEEDED THAT INCLUDE MORE THAN ONE SPACE, ZONE, AREA OR LIGHTING GROUP?

Will the occupant want a single switch to turn on and off all lighting in the building? Will the cleaning crew require special lighting controls to turn on multiple groups or zones? What type of automatic shutoff shall be used to turn off lighting in the building when the building is unoccupied?

The planning phase usually involves mapping the system requirements, and determining the hardware needs of the system. Thought should be given to placement and packaging of hardware, programming and cabling requirements. As planning transitions into designing, documentation of the system layout and functionality becomes more critical.

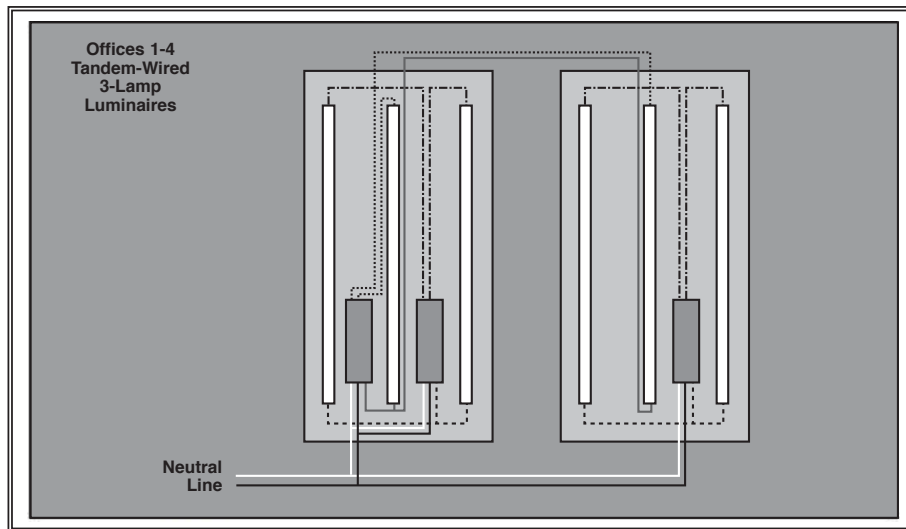


**DESIGN PROJECT**



Office & Conference Room Design Project

**SPACE LIGHTING**



Offices 1-4: Tandem wired 3-lamp fluorescent luminaires (32WT8)  
Lighting power density of  $192W/225SF = .853 W/SF$

Conf Room: Recessed 32W compact fluorescent luminaires  
120V phase angle dimming ballast per luminaire

**SPACE CONTROL**

Offices 1-4: Multi-level control (0, 33%, 67%, 100%)  
4-button keypad (all on, A on/off, B on/off, all off)  
Occupancy sensor shutoff

Conf Room: Multi-Scene control with dimming control  
Dynamic Labeling Technology keypad (4-buttons x 2 pages)  
(6) preset scenes (all on, meeting, presentation, lecture, dining, all off)  
Dim up/down table lights  
Dim up/down room lights  
Occupancy sensor shutoff

Equipment Selection by Space

Offices 1-4: (1) C-Bus™ PIR 360° occupancy sensor per office  
(1) 4-Button Neo Keypad per office  
(2) 20A relay outputs per office

- Conf Room: (2) C-Bus™ PIR 360° occupancy sensors
- (1) DLT™ Neo™ keypad
- (4) 4A Phase angle dimmer outputs (1 per group)

C-Bus Input Unit Placement

- Offices 1-4: - Place keypad in wall box adjacent to entry
- Place occupancy sensor in ceiling over desk for best coverage

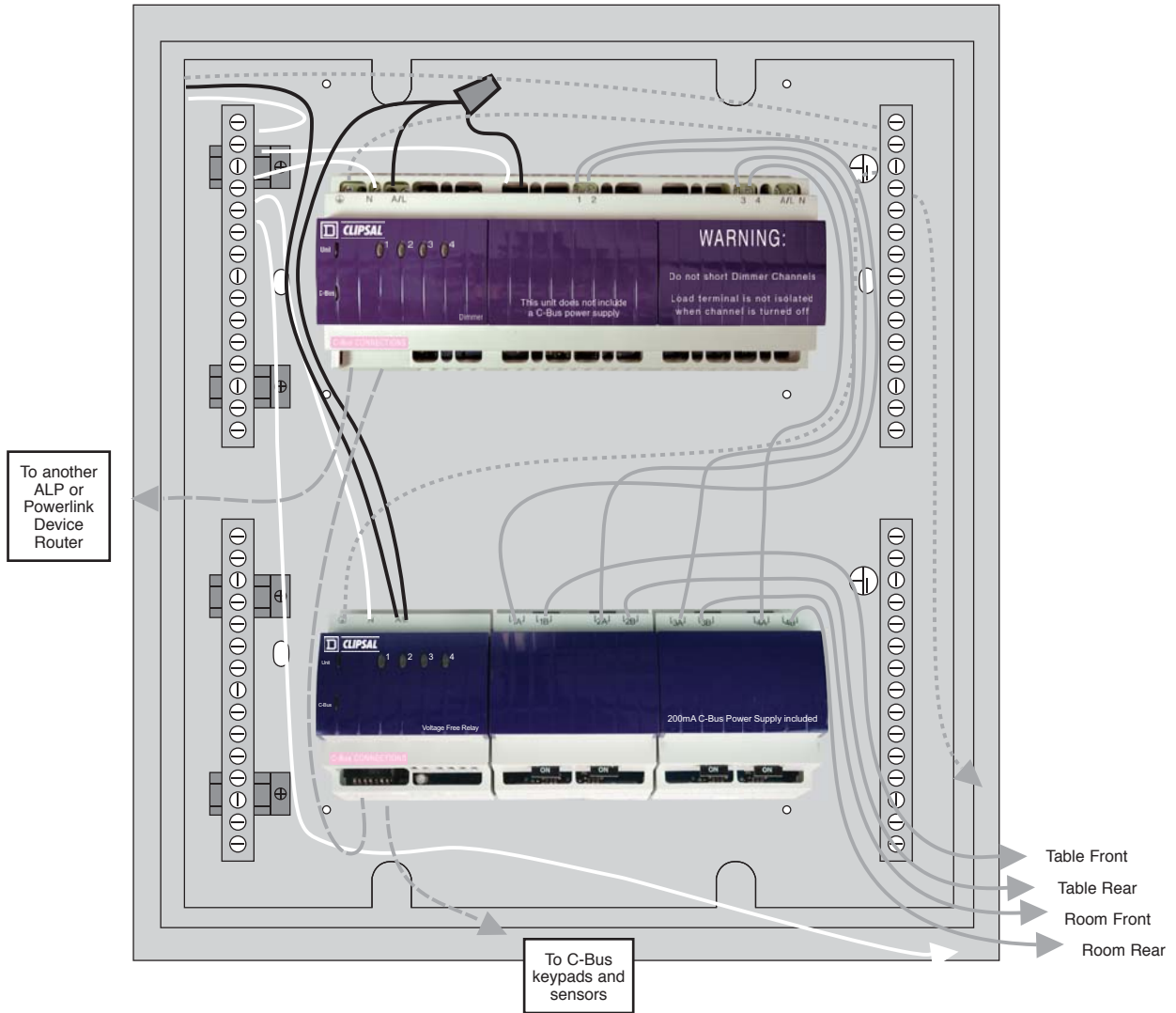
- Conf Room: - Place DLT keypad in wall box adjacent to entry
- Place (2) occupancy sensors over table for best coverage

Packaging of Output Units

- Offices 1-4: In total, offices require (2) 4-Ch 20A relay units.
- Prepackaged Area Lighting Panel (ALP) SLCZ082000H



Conf Room: In total, requires (1) 4-Ch Phase Angle Dimmer unit and (1) 4-Ch 20A relay unit.  
 Custom packaged Area Lighting Panel in 24M enclosure.

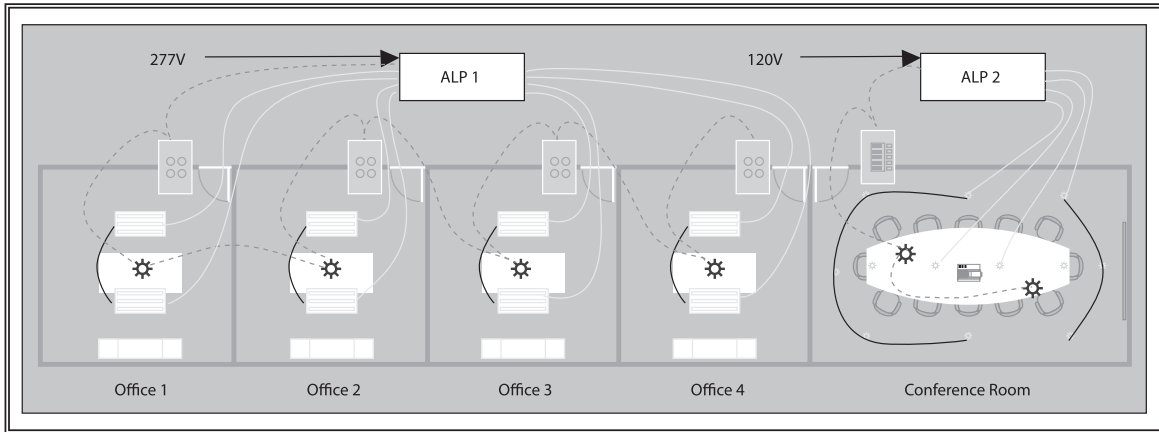


ALP with 4x20A Relay & 4x4A Phase Angle Dimmer

**BILL OF MATERIAL**

Catalog #	Description	Qty
SLC5753L	C-Bus™ 360° PIR Occupancy Sensor	6
SLC2042004DT	C-Bus 4x20A Relay 120V No P/S	1
SLC2042004DT	SQD™ Clipsal 24M Enclosure	1
SLCZ082000H	SQD Clipsal™ ALP 8x20A Relay 277V with P/S	1
SLC2042004DT	C-Bus 4x4A Phase Angle Dimmer with P/S	1
SLC5084NL (WE)	C-Bus 4-Button Saturn™ Keypad White	4
SLC5085DL (WE)	C-Bus DLT Saturn Keypad White	1

**FINISHED DESIGN**



Completed Project Layout

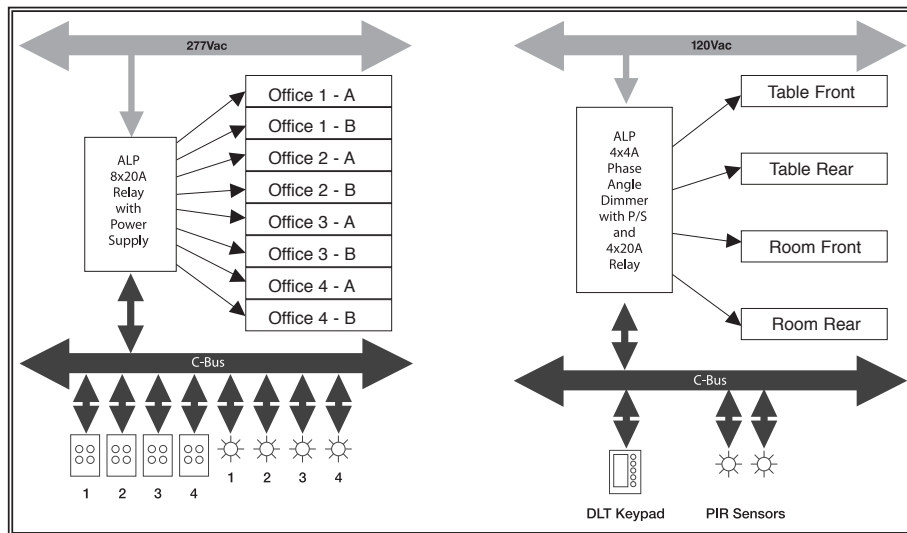


Illustration of Design Project Controls

**INSTALLATION**

Once the design phase is complete, installation may begin. Several simple steps are typically followed to achieve a fast and accurate installation of the C-Bus™ network control system.

1. Implementing programming requirements of the design on a PC. Build a database using C-Bus software that includes all the C-Bus units used in the lighting control system. Each unit is assigned a unit address.
2. Using the PC and a PC Interface, initialize and program each C-Bus device one at a time. Each device is assigned a unit address.
3. Packaging, cabling and electrical installation of the hardware.
4. Finalization and additional programming of C-Bus devices as required.

**COMMISSIONING**

Verify compliance with the specification and commission the system. A design review may be performed at this point in the process. Modifications or design changes seldom require installation of additional hardware, typically requiring only programming changes.

Ethernet  
Modbus TCP/IP



PC Web Browser

Powerlink  
Integrated  
Control  
Center



Square D® Clipsal® systems can be used independently or seamlessly combined to provide the optimal lighting control solution for your home or business



Powerlink  
Device  
Router

Input Units



Neo™  
Keypad



Saturn™  
Keypad



DLT™  
Keypad

Output Units



Multi Channel  
Relays

Network Units



Power  
Supply



PC  
Interface

## Square D Stand Alone Occupancy Sensors



Passive Infrared  
Occupancy Sensor



Ultra Sonic  
Occupancy Sensor



Dual Technology  
Occupancy Sensor



Wall Switch  
Occupancy Sensor



Touch  
Screen



Occupancy  
Sensor



Light Level  
Sensor



Bus  
Coupler



Auxiliary  
Input Unit



General  
Input Unit



Incandescent  
Dimming Unit



Professional  
Dimmer



0-10V  
Fluorescent  
Dimming Unit



DALI  
Gateway



Network  
Bridge



Ethernet  
Network  
Interface

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