

# Square D Safety Switches

Power isolation solutions for daily activities and emergencies



Make the most of your energy<sup>SM</sup>

by Schneider Electric

# Square D Safety Switches



Setting the standard for performance, quality, and reliability in today’s commercial and industrial applications



First introduced in 1907, Square D™ by Schneider Electric™ safety switches have a long history of leadership in safety and performance. Since then, Schneider Electric has pioneered many innovations to help maximize the lifetime value of your safety switches.

Safety switches play a crucial role in today’s commercial and industrial settings. They isolate power in daily activities and provide an effective way to interrupt power in an emergency. Two primary applications for safety switches are as a lockout on sight disconnect and as a circuit isolation device.

Square D safety switches are designed to outperform other switches in a wide range of demanding applications.

| Key Customer Applications      |                              |                           |                  |
|--------------------------------|------------------------------|---------------------------|------------------|
|                                | Sight Disconnect for Motors* | Branch Circuit Protection | Service Entrance |
| Industrial Facilities          | X                            | X                         |                  |
| Retail Construction            | X                            | X                         | X                |
| Water Wastewater               | X                            | X                         | X                |
| Data Centers                   | X                            | X                         |                  |
| Automotive                     | X                            | X                         |                  |
| Packaging                      | X                            | X                         |                  |
| Pharmaceutical, Food, Beverage | X                            | X                         |                  |
| Commercial OEM                 | X                            | X                         |                  |

\* Occupational Safety and Health Administration (OSHA) compliance.

# Performance



## Three Times the Life – Three Times the Value

The performance of safety switches is important to the safe and profitable operation of many industrial settings. In addition, requirements from organizations such as OSHA have increased the use of safety switches in many commercial and industrial facilities.

The useful life of a safety switch is less than two years based on NEMA® KS-1 life test requirements, in lockout/tag out applications where a switch is operated just once per hour, 24 hours a day, seven days a week. For switches in these high-use applications, durability is key.

Square D safety switches provide significantly higher levels of mechanical endurance than NEMA KS-1 require. This translates to improved reliability in a production environment. In fact, the standard for the design life of Square D F-Series safety switches is a **minimum of three times the NEMA requirement**. No competitor comes close to the performance offered by Square D safety switches.

## Designed for the Best Performance

A key performance benefit of the Square D safety switch is its ability to break load. A locked motor can draw six to eight times motor full-load current. In an emergency situation, it's important to have a switch with enhanced load break capability. A key element of Square D safety switches is their blade and jaw construction designs built to easily manage heavy motor loads and arc interruptions.

| Potential Cost Avoidance Due to Square D Switch Life |                                         |                                                 |                                                    |                                                 |
|------------------------------------------------------|-----------------------------------------|-------------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| Operations of switch/ 8-hour shift                   | Operations per year in 24/7 environment | Life of Square D switch in years <sup>(1)</sup> | Life of competitive switch in years <sup>(1)</sup> | Cost avoidance by using Square D <sup>(2)</sup> |
| 1                                                    | 1,095                                   | 45.7                                            | 13.7                                               | \$190                                           |
| 2                                                    | 2,190                                   | 22.8                                            | 6.8                                                | \$380                                           |
| 3                                                    | 3,285                                   | 15.2                                            | 4.6                                                | \$570                                           |
| 4                                                    | 4,380                                   | 11.4                                            | 3.4                                                | \$760                                           |
| 5                                                    | 5,475                                   | 9.1                                             | 2.7                                                | \$950                                           |

<sup>(1)</sup> Life determination based on 50,000 operations for Square D F-Series 30 A and 15,000 operations for competition. Actual number of operations will vary based upon electrical load, duty cycle, and environmental conditions.

<sup>(2)</sup> Does not include cost of lost productivity. Switch cost replacement: labor = 2 hour @ \$45/hour cost of switch @ \$100. Maximum usable life of switch assumed to be 20 years.

# Quality

## Safety First

Square D safety switches are, above all else, built to increase safety. Visible blades are an important feature, and they must be visible in real-world conditions to visually verify that the downstream circuit is de-energized. Our switch blades are easily visible, even in the less-than-ideal lighting conditions where electrical equipment is often installed.

An optional view window adds another degree of safety through visual verification of switch position without the need to open the door.

In addition, the design of the Square D safety switch includes an oversized arc suppressor, a key feature in the ability of the switch to break the load by effectively attenuating the arc for a clean interruption.

## Designed for Long-Term Durability

Rugged construction and corrosion protection provide the industry's longest lasting switches. Galvannealed steel in all single-throw Type 3R and 12 enclosures provides superior corrosion protection. Type 4X seam-welded enclosures help extend equipment life by providing excellent environmental and corrosion protection without the use of a silicone sealer, which can be incompatible with some manufacturing processes.

Managing temperatures inside the switch is essential to providing greater service life. Square D safety switches feature more copper than other switches available on the market today. This larger amount of copper is one of the reasons Square D safety switches have lower operating temperatures.

Heat is not the only factor that impacts switch life. The enclosed operating mechanism design of Square D safety switches reduces the amount of dust and other contaminants that shorten the mechanism's operating life.

## A Full Range of Accessories

Square D safety switches feature a complete offering of accessories, available either factory-installed or field-installable. Factory-installed options include key interlocks, nameplates, push buttons, and optional safety colors. Field-installable accessory options include neutral kit, ground lugs, electrical interlocks, Class "R" fuse rejection kits, compression terminals, and conduit hubs.

## Efficient Installation

Our time-saving design features make installation quick and easy.

Square D safety switches feature quick-release cover latches that are easier to operate than screw-fasteners. On Type 4X and Type 12 switches, this design feature ensures a better gasket seal — a critical feature in adverse operating conditions — than is available with designs that rely on screw-fastened covers. Tangential knock-outs enable easier installation of conduit, without the need for costly, time-consuming offsets and bends.

Mechanical Endurance Requirements for UL, NEMA, and F-Series Switches

|                      | Number of Operations** |                        |                      |                  |
|----------------------|------------------------|------------------------|----------------------|------------------|
| Switch Rating (Amps) | UL 98                  | NEMA KS 1 General-Duty | NEMA KS 1 Heavy-Duty | E-Series Reqmts. |
| <b>30 and 60</b>     | 10,000                 | 10,000                 | 15,000               | 50,000           |
| <b>100</b>           | 10,000                 | 10,000                 | 14,000               | 50,000           |
| <b>200</b>           | 8,000                  | 8,000                  | 12,000               | 36,000*          |

\* Single-throw switches only.

\*\* Actual number of operations may vary based on environmental conditions.

Short-Circuit Current Ratings

| UL Listed Fuse Class | General-Duty RMS Sym Amps | Heavy-Duty RMS Sym Amps |
|----------------------|---------------------------|-------------------------|
| <b>Plug</b>          | 10,000                    | N/A                     |
| <b>H</b>             | 10,000                    | 10,000                  |
| <b>K</b>             | 10,000                    | 10,000                  |
| <b>J</b>             | 100,000                   | 200,000                 |
| <b>R</b>             | 100,000                   | 200,000                 |
| <b>T</b>             | 100,000                   | 200,000                 |
| <b>L</b>             | —                         | 200,000                 |

# Reliability

## Cost-Saving Maintenance

Advanced maintenance features extend switch life and reduce downtime, saving both labor and material costs. The Square D safety switch modular design allows the replacement of all interior worn or damaged components.

Field-replaceable components such as interior line bases, load bases, and mechanisms are available. Moreover, handles and lock plates are also replaceable if they are damaged or vandalized.

In addition, Square D Type 4X and 12 safety switches come standard with fuse pullers, increasing the convenience and safety of maintenance. Fuse pullers are also field-installable on certain models.

## Operation and Safety

Nothing is as important in the design of a switch as understanding how it will be used. To ensure Square D safety switches continue to meet the needs of commercial and industrial applications, products are engineered with the operational procedures and safe work practices of customers in mind.

## Superior Handle Design

The Square D F-Series insulated switch handle is an industry exclusive. It is made from a high-strength polymer chosen for weather resistance, durability, and impact strength.

The two-color, position-indicating handle on heavy-duty safety switches enhances operator safety by aiding in visual recognition of switch position from an angle or at a distance. The simple concept of having contrasting colors on the handle enhances the ability of the operator to determine quickly the position of the switch, even in low-light conditions. In an emergency, it is vital that switch position be accurately recognizable. Plus, an embossed on/off marking is a permanent indication of the switch position and cannot be removed or vandalized.



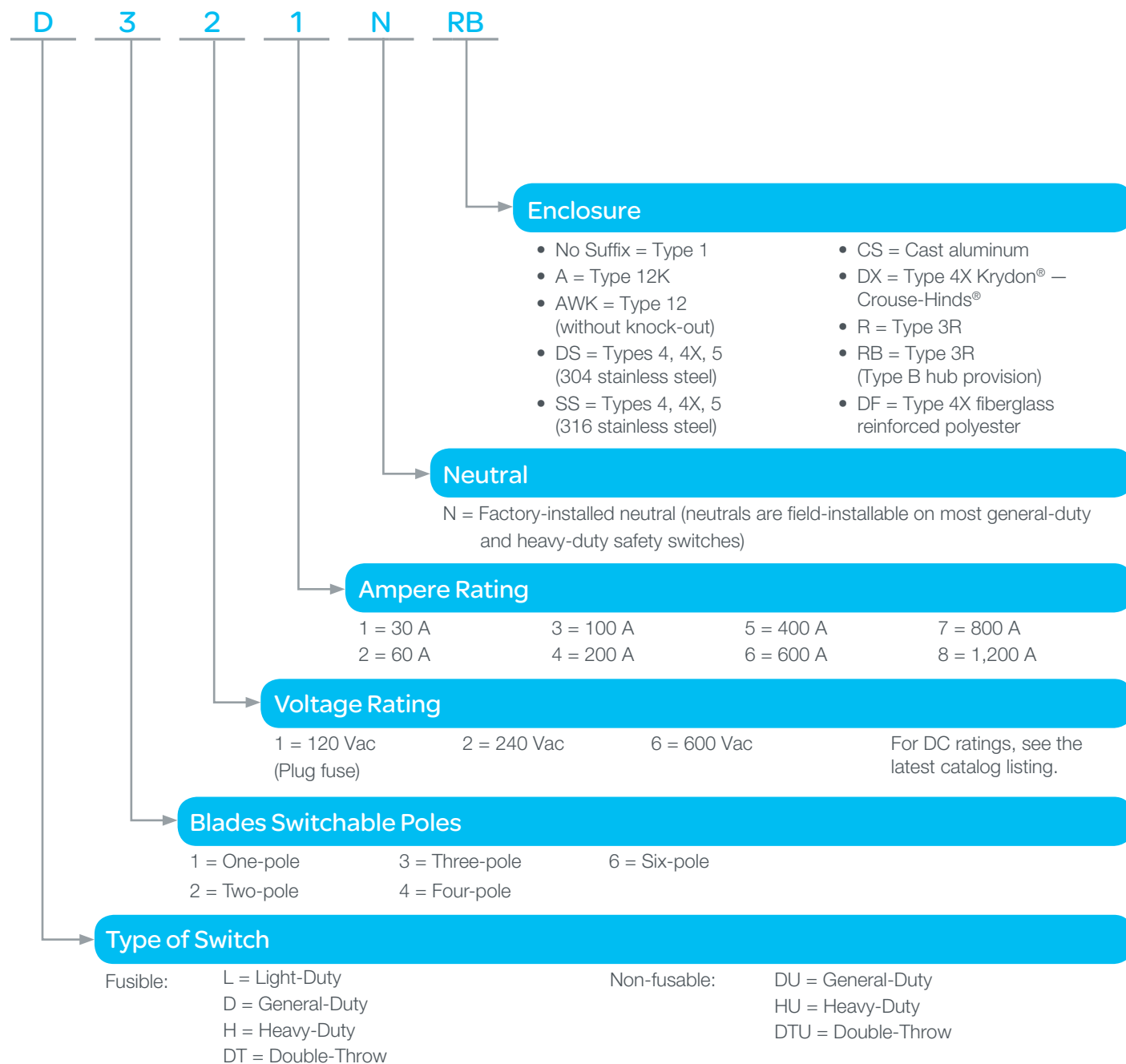
## Tamper-Resistant Enclosure

Resolving lockout issues is a priority with major industrials. Square D F-Series safety switches have an extruded lock plate feature that helps prevent tampering with lockout devices. The lock plate opening is extruded to reduce the possibility of lockout devices being removed by non-authorized personnel.

With the use of the handle lock plate, the switch can be locked in the OFF position with up to three padlocks to comply with OSHA lockout requirements. The safety switch can also be modified so that the switch can be locked in the ON position, if required by the application.

Heavy-duty dual cover interlocks are key safety features on single-throw and double-throw heavy-duty switches. These prevent the opening of the cover when the switch is ON or turning the switch ON when the cover is open. Qualified personnel can also defeat this feature allowing them to perform any necessary testing.

# Catalog Numbering System for Safety Switches



## Miscellaneous

EI or EI2 = Factory-installed electrical interlock

CLR = Class R fuse kits

FP = Fuse pullers

GL = Ground lugs

SLC = Copper lugs

LK = Compression lugs

SPLO = Lock on

VW = Viewing window

NP = Phenolic legend plate

KI = One-key interlock

KIKI = Two-key interlocks

WA = Appleton Powertite® interlocked receptacle

WC = Crouse-Hinds Arktite® interlocked receptacle

WH = Hubbellock® interlocked receptacle

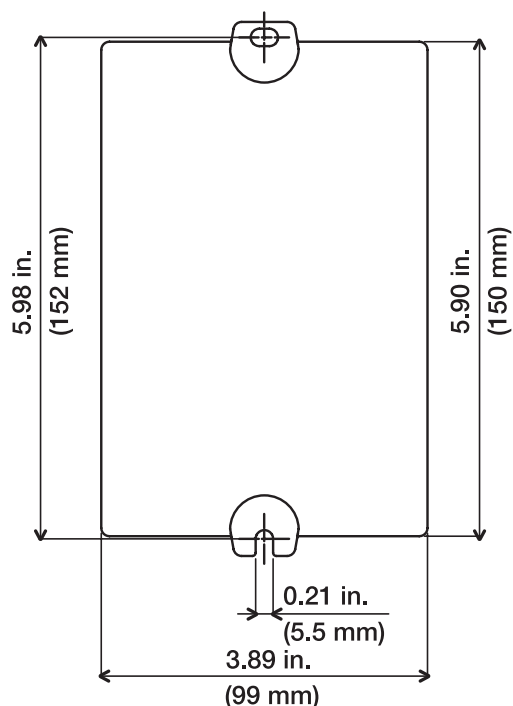
For Types 7 and 9 construction, see the latest catalog listing.

# Square D MD Enclosed Motor Disconnect Switch

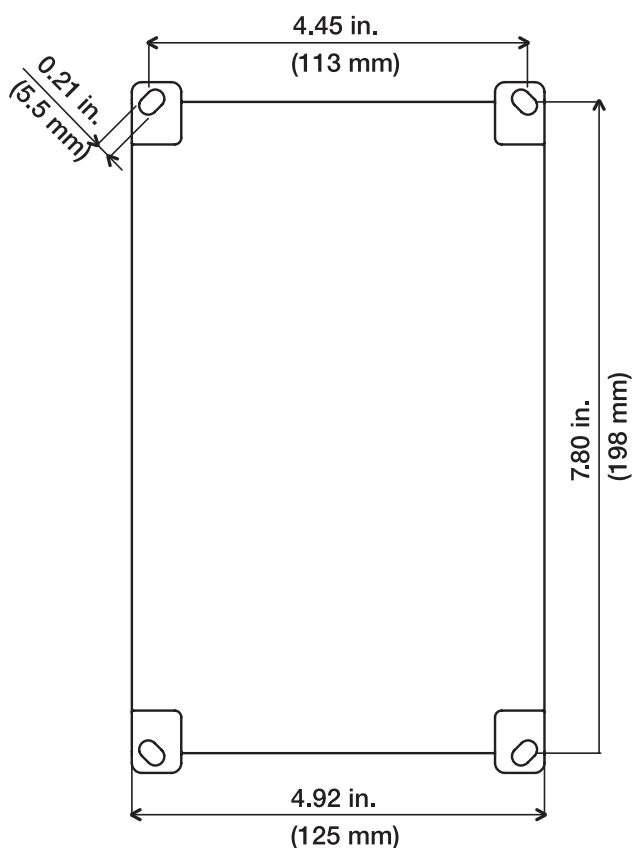
| NEMA 4X Enclosed Switches |                            |               |         |                |
|---------------------------|----------------------------|---------------|---------|----------------|
| Listed                    | Maximum Horsepower Ratings |               |         | Catalog Number |
|                           | Three-Phase                |               |         |                |
|                           | 220 – 240 Vac              | 440 – 480 Vac | 600 Vac |                |
| UL 508                    | 7.5                        | 20            | 25      | MD3304X        |
| UL 508                    | 20                         | 40            | 40      | MD3604X        |

| Accessories                                                       |                |
|-------------------------------------------------------------------|----------------|
| Description                                                       | Catalog Number |
| Two normally open auxiliary contact modules                       | MDSAN20        |
| One normally open + one normally closed auxiliary contact modules | MDSAN11        |
| Additional power pole — 30 A                                      | MDS30P         |

30 A Enclosed Switch  
Mounting Diagram



60 A Enclosed Switch  
Mounting Diagram



# The Most Complete Line of Switches in the Industry

|                                                         | Amp Range  | Vac Max. | Vdc Max. | Fusible                 | Enclosure Type                                                                                                                                                      |
|---------------------------------------------------------|------------|----------|----------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General-Duty</b>                                     | 30 – 800   | 240      | —        | Fusible and Non-Fusible | Type 1, 3R                                                                                                                                                          |
| <b>Heavy-Duty</b>                                       | 30 – 1,200 | 600      | 600      | Fusible and Non-Fusible | Type 1, 3R, 4, 4X<br>Stainless Steel, 5, 12                                                                                                                         |
| <b>Four-Pole Heavy-Duty</b>                             | 30 – 600   | 600      | 600      | Fusible and Non-Fusible | Type 1, 3R, 4X<br>Stainless Steel, 12                                                                                                                               |
| <b>Six-Pole Heavy-Duty</b>                              | 30 – 200   | 600      | —        | Fusible and Non-Fusible | Type 1, 3R, 4X<br>Stainless Steel, 12                                                                                                                               |
| <b>Double-Throw</b>                                     | 30 – 100   | 600      | 600      | Fusible and Non-Fusible | Type 1, 3R, 4X<br>Stainless Steel, 12                                                                                                                               |
| <b>Double-Throw</b>                                     | 200 – 600  | 600      | 250      | Non-Fusible             | Type 1, 3R, 4X<br>Stainless Steel, 12                                                                                                                               |
| <b>Interlock Receptacle Switches</b> <sup>(1) (2)</sup> | 30 – 100   | 600      | 250      | Fusible and Non-Fusible | Type 1, 3R, 4, 4X<br>Stainless Steel, 5, 12                                                                                                                         |
| <b>Hazardous Location Switches</b>                      | 60 – 225   | 600      | 250      | Non-Fusible             | Type 7 and 9 — Divisions 1 and 2 of the following: Class 1, Groups C and D, Class 2, Groups E and F; on Class 3, Hazardous Locations as defined in NEC® Article 500 |

<sup>(1)</sup> Appleton Powertite, Crouse-Hinds Arktite, and Hubbell receptacles.

<sup>(2)</sup> The MD motor disconnect switch serves as a local on/off switch for a motor when the motor branch circuit protection is in a central enclosure. It is in a compact NEMA 4X enclosure and is available in 30 A and 60 A versions.

Type 1 (indoor), Type 3R (outdoor), Type 4, 4X, 5 (watertight and dust-tight, corrosion-resistant) (cast aluminum, stainless steel, glass polyester, or Krydon), Type 12 (mill and foundry type).

Switches are UL Listed (UL 98 Enclosed Switches) and meet or exceed the NEMA KS1 standard unless otherwise noted.

For more information, visit  
[www.schneider-electric.com/us](http://www.schneider-electric.com/us)  
 and enter key code **y290v**.

Enter key code

> OK



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