

**LS-Titan** Safety Limit Switches

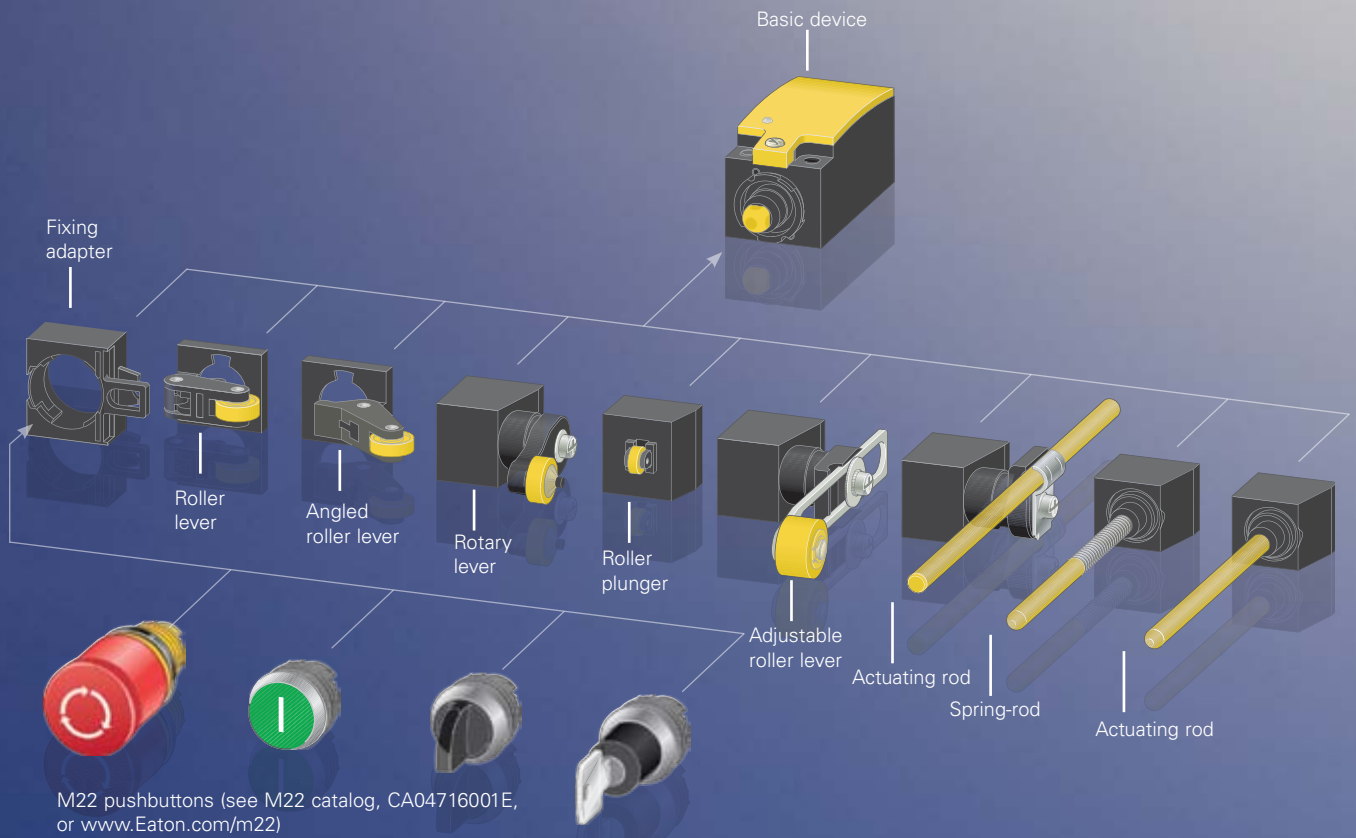


Affordable. Functional. Safe.

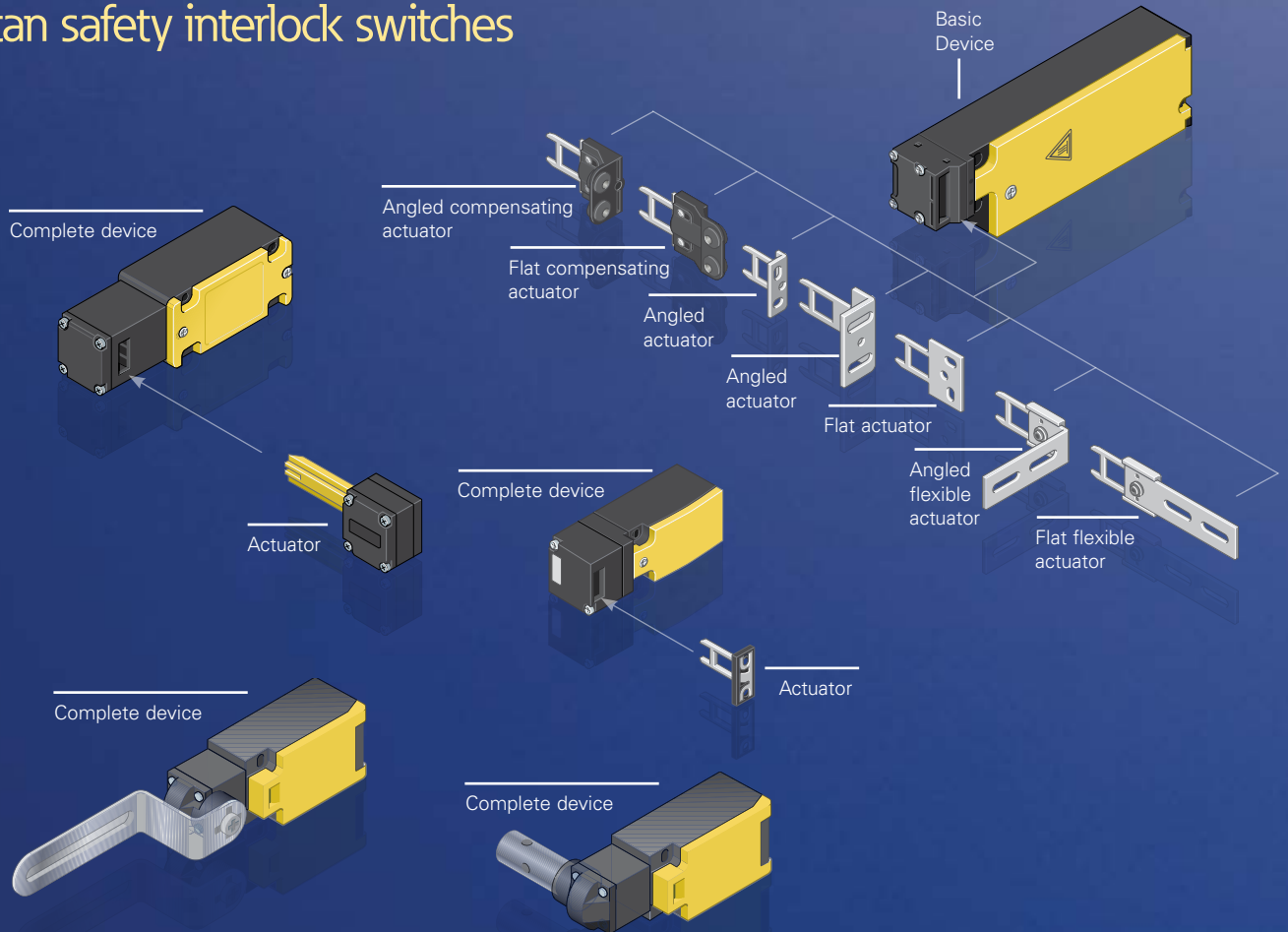
**EATON**

*Powering Business Worldwide*

# LS-Titan safety position limit switches



# LS-Titan safety interlock switches



# Protect your personnel and processes with LS-Titan™

Through continuing investments, Eaton's electrical business has grown into a world-class provider of power protection and control products. Meeting your specific needs means offering a complete line of motor protection, control and logic devices—all the latest in technology.

From contactors, starters and drives to pushbuttons, relays and programmable controllers, you'll have the edge when it comes to application-specific solutions. Trust Eaton to deliver the products and solutions that will make your process more efficient and effective.

In today's environment, nothing is more important than ensuring the utmost safety of your employees. On the plant floor, the use of safety-rated control products can mitigate many of those risks when they are applied correctly as part of a safety control system.

Arguably, the most critical safety point on the plant floor is man-machine safeguarding. Heavy equipment—such as metal stampers, woodworking machinery, conveyors and assembly equipment—can present an unreasonable risk of injury if not properly safeguarded.

To provide protection in these applications, Eaton has introduced LS-Titan: a full line of safety-rated limit switches designed specifically to protect personnel and processes. More than 100 switch models make up the LS-Titan line, and offer comprehensive solutions to a wide range of applications.

An important safety feature of LS-Titan is provided by positive opening contacts (per IEC/EN 60947-5-1). "Positive opening" describes a switch designed with normally closed (NC) electrical contacts which, upon switch actuation, are forced open by a nonresilient mechanical drive mechanism. A conventional limit switch is typically designed to use a spring force to open normally closed electrical contacts,

presenting potential hazards should the switch contacts become "stuck" or "welded" shut. Consequently, such designs are not recognized as suitable for safety applications.

Beyond the safety functionality of positive opening contacts, design engineers and safety professionals have long recognized the need to use tamper-resistant key interlocks. In many factories, workers often override or bypass safeguards intended to protect them from injury. The LS-Titan family includes a complete selection of safety interlock devices designed to be difficult to defeat using simple, readily-available means such as paper clips, screwdrivers, and other common tools.

For more information on Eaton's LS-Titan family of safety switches, visit [www.eaton.com/LS-Titan](http://www.eaton.com/LS-Titan).



# LS-Titan safety position limit switches

## Miniature DIN style

At the core of the LS-Titan switch family are miniature DIN (IEC type) safety-rated limit switches. At just 22x34x76 mm and economically priced, these switches are perfect for a wide variety of packaging, material handling, and other machinery OEM applications.

## A versatile offering

The LS-Titan family has been designed for application flexibility. A wide selection of interchangeable heads are available, and can be rotated in four different directions. Switches can

be ordered as complete (composite) units, with heads already installed, or as separate modular components. Depending on the needs of the application, LS-Titan switches can be ordered in plastic (totally insulated) or metal enclosures. And it's not just the switch bodies—most of the switch heads can also be ordered in either plastic or metal.

## Easy to install, fine-tune and maintain

Installing and maintaining LS-Titan switches couldn't be easier, since operations can be performed with a flat-head screwdriver. To remove the switch head from the body,

just unscrew the front switch plate and twist counter-clockwise. To wire the switch, simply unscrew the front plate and secure the wires using the internal screw terminals. To select a custom trip point (for LSE models) use a screwdriver to adjust the potentiometer located inside the enclosure. These smart design choices simplify installation and maintenance significantly.

## At home in safety applications

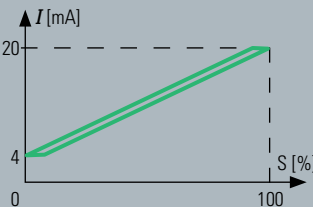
Equipped with double-break contacts, LS-Titan safety position limit switches are also suitable for use in the configuration of redundant safety circuits. The switches

featuring double break contacts are suitable for use with electronic devices in accordance with IEC/EN 61 131-2, enabling the safe exchange of information with any controller.

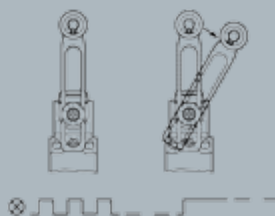
When it comes to protecting your personnel and most vital factory processes, trust LS-Titan.



## Analog output



## Easy setpoint adjustment



## A technology first: Electronic position safety switches

A highlight of the LS-Titan switch line are the world's first electronic position switches (LSE models). These models come in two variants: one with the ability to output an analog signal (4–20 mA or 0–10V) proportional to the actuating lever's position; and another model which can easily be set in the field to trip at a certain point—using just a screwdriver for adjustment. These features, which in the past required additional logic and more complex control systems, can now be accomplished within the switch itself. Both models carry TUV Functional-Safety certification and include built-in safety features, such as self-testing and diagnostic outputs.

# LS-Titan safety interlock switches

## Miniature DIN, full-size DIN, and advanced style

One of the most dangerous applications on the plant floor involves the man-machine interface, particularly when it involves heavy or moving machinery. These hazardous areas are usually protected with guards that prevent tampering while the machine is operating.

### Protecting personnel from dangerous processes

Eaton's LS-Titan safety interlock switches have been specifically designed for monitoring the position of protective guards such as doors, flaps, hoods and grilles. Switches in this family are safety-rated, include positive opening N.C. contacts, and cannot be defeated using simple tools such as pliers, screwdrivers and nails.

The LS-Titan safety interlock family is comprised of three types of safety switches: key interlock, door-flap and door-hinge switches.

### Applying key interlocks

Key interlock switches are a two-piece design, made up of the switch and key (actuator). The key portion of the switch is affixed to a movable door, cover or other guard. The switch itself is mounted to a rigid portion of the machine. When the guard is opened, the key is removed from the switch, thereby positively breaking the normally closed contacts. This interrupts the control circuit, stopping machine operation.

### Solenoid-powered interlocks for increased protection

Offering the highest level of personnel protection, the LS-Titan solenoid key interlocks are available in power-to-lock or power-to-unlock models. These solenoid-operated models also include a wide variety of different keys for lid-type doors, sliding doors,

doors that close at an angle and doors that do not close precisely.

### Specialty interlocks for unique applications

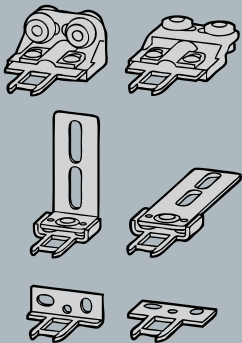
The door-flap and door-hinge switches are one piece designs, suitable for when a key cannot be mounted in the application. When an attempt is made to open a protected door hinge or flap during operation, these switches disconnect the power supply to the machine or installation.

Both switches feature four-way adjustable heads.

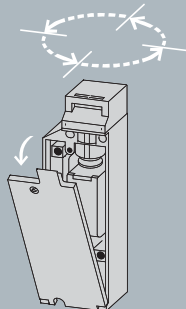
When it comes to protecting your employees from dangerous industrial applications, Eaton's LS-Titan interlocks have you covered.



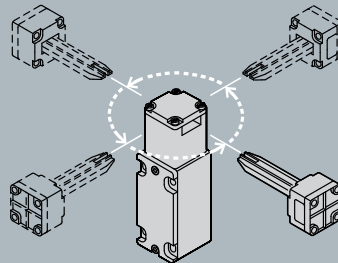
Wide selection of interlocking keys for all switches



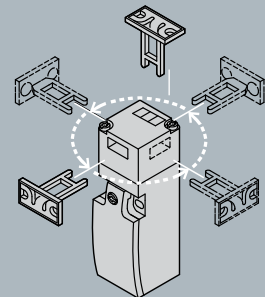
Solenoid interlock: Four-way adjustable heads



DIN-style interlock: Four-way adjustable heads



Mini-DIN interlock: Five-way adjustable heads



A larger offering of interlocking keys and 4/5-way adjustable heads provides mounting flexibility.

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