



Mechatronic safety devices with RFID technology



Passion for Quality

NG



PL e + SIL 3

The devices are constructed with redundant electronics. As a result, the maximum PL e and SIL 3 safety levels can still be achieved through the use of a single device on a guard. This avoids expensive wiring in the field and allows faster installation.

Actuators with high coding level



The devices are provided with an electronic system based on RFID technology to detect the actuator. This allows to provide each actuator with different coding and makes it impossible to tamper with a device by using another actuator of the same series. Millions of different coding combinations are possible for the actuators. They are therefore classified as high level coded actuators, according to EN ISO 14119.

NS



ST



Series connection

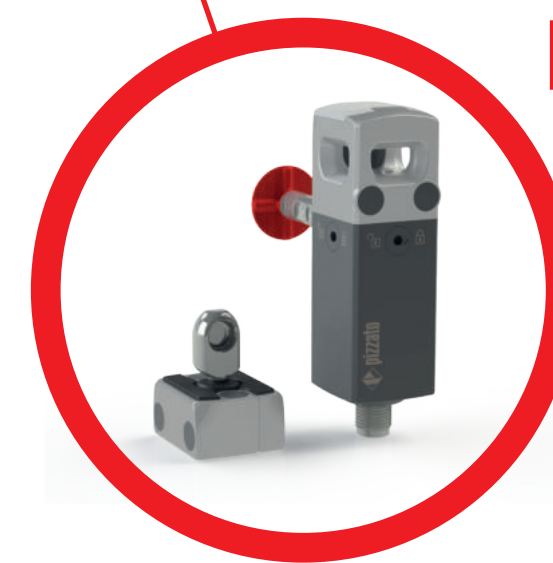
Multiple switches can be connected in series, up to 32 sensors in series, while still maintaining the maximum safety levels PL e laid down in EN ISO 13849-1 and SIL 3 acc. to EN IEC 62061:2021.

The fact that the PL e safety level can be maintained even with 32 switches connected in series demonstrates the extremely secure structure of each single device.

High protection degree

These devices are designed to be used in the toughest environmental conditions and they pass the IP67 immersion test acc. to EN 60529. They can therefore be used in all environments where the maximum degree of protection is required for the housing. Due to their special design, these devices are suitable for use in equipment subjected to cleaning with high pressure hot water jets. These devices meet the IP69K test requirements according to ISO 20653 (water jets with 100 bar and 80°C).

NX



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NX series safety switches with solenoid and RFID technology

The safety switches of the NX series are the most compact on the market, making them the perfect solution for use in the smallest of spaces. These switches are used primarily on machines where the hazardous conditions remain for a while, even after the machines have been switched off; for example, mechanical parts such as pulleys, saw blades, etc., could continue to move, or parts of the machine could still be hot or under pressure. Thus, the switches can also be used if individual guards are only to be opened under certain conditions.

Versions with mode 1 (safety outputs active when guard closed and locked) are interlocks with guard locking acc. to ISO 14119; the product is labelled with the symbol shown.

The strong interlocking system guarantees a maximum actuator holding force of $F_{\text{TEST}} = 6000 \text{ N}$.



JOINTED ACTUATOR FOR INACCURATELY CLOSING GUARDS

The actuator for the switches of the NX series is articulated, thereby allowing the actuator pin to be safely guided into the switch through the centring hole. As a result, the actuator and switch do not need to be precisely aligned during installation.

HEX-KEY RELEASE DEVICE AND ESCAPE RELEASE BUTTON

The hex-key release device (auxiliary release) enables actuator release exclusively using a hexagonal key. The device also functions with no power supply and, once actuated, prevents the guard from being locked. The switch is available with either a front auxiliary release or three auxiliary releases located on three sides of the switch.

The escape release button allows actuator release and immediate opening of the guard. Generally used in machines within which an operator could inadvertently become trapped, it faces towards the machine interior, to allow the operator to exit even in the event of a power failure. The button has two stable states and can be freely extended in length with suitable extensions.

OUTPUT WITH CABLE OR CONNECTOR

The electrical connection via M12 connector, integrated cable or integrated cable with M12 connector, makes the device suitable for the most diverse applications. The connector versions allow faster device replacement and installation, by making incorrect wiring connection impossible. Versions with cable can be ordered with various cable lengths.



COVER WITH MULTICOLOUR SIGNALLING

The switches of the NX series are the only switches in their market segment equipped with a large, illuminated RGB-LED cover that enables the fast and immediate diagnosis of the function states. As a result, this display can also easily be read from a distance and from all viewing angles.

THREE INPUTS FOR THE ACTUATORS

The switch is always mounted using the two front screws, whereby it does not matter whether the doors open to the right or left or if they are sliding or hinged doors.

This is made possible by the three inputs for the actuator: one on the front and two on the sides. This eliminates the need to rotate the head or switch.

BISTABLE OPERATING PRINCIPLE

The safety switch of the NX series is designed as bistable switch. This means that the internal solenoid that locks and unlocks the device does not operate in the normally de-energised or normally energized mode, but in the bistable mode, i.e., it is stably in the locked or unlocked position. The command for locking and unlocking continues to follow the "power-ON released" logic, i.e., as long as voltage is applied to the activation inputs of the solenoid, the actuator is unlocked. This approach offers numerous advantages, including, among others, the locked or unlocked state being retained even if the device should experience a power failure. Bistable operation of the internal solenoid ensures that the NX switch remains stably in the state to which it was last actuated.

NS series safety switches with solenoid and RFID technology

NS series switches are suitable for the management of guards on machines where the hazardous conditions persist even after the machine has been switched off, due to inertia of moving hazardous parts, or specific material or machinery temperature or pressure conditions within the protected area.

The 3 different hardware activation modes allow the guard lock function to be used for machines with inertia (mode 1), for machines with no inertia (mode 2), and for machines with inertia and safety outputs used either for the door closed and locked state, or door closed only state (mode 3).

Their light and versatile design means they are particularly suited to light aluminium, polycarbonate or light metal grating guards, typically used in woodworking and packaging machines, or assembly islands.



JOINTED ACTUATOR FOR INACCURATELY CLOSING GUARDS

All NS series actuators are articulated, thereby allowing the actuator pin to be safely guided into the switch through the centring hole. As a result, the actuator and switch do not need to be precisely aligned during installation. In addition, the device can thereby be used on guards with a minimum actuation radius of 150 mm without the actuation pin needing to be angled.

SIX LEDS FOR IMMEDIATE DIAGNOSIS

As the LEDs have been designed for quick immediate diagnosis, the status of each input and output is highlighted by one specific LED. This makes it possible to quickly identify the interruption points in the safety chain, which device is released, which guard is opened and any errors inside the device. All of this at a glance, without needing to decode complex flashing sequences.

HEAD AND RELEASE DEVICES WITH VARIABLE ORIENTATION, NOT DETACHABLE

The upper part of the switch, which contains the release devices, can be rotated and is permanently connected to the lower part, which contains the outputs for the electrical connection. After loosening the fastening screws, the individual modules can be rotated in 90° steps. As a result, a single device can be used to realise various configurations without the installation technician needing to concern himself with the correct assembly of various parts. The fastening screws are provided with protection caps to prevent dirt build-up and thereby simplify cleaning.

HOLDING FORCE OF THE LOCKED ACTUATOR

The strong interlocking system guarantees a maximum actuator holding force of $F_{\text{TEST}} = 2100 \text{ N}$.

THROUGH HOLE TO PREVENT DUST AND DIRT DEPOSITS

The switch is provided with a through hole for inserting the actuator. Thanks to this unique feature, any dust that enters the actuator hole can always come out on the opposite side instead of remaining inside. Moreover, the lock pin is provided with a diaphragm seal, making the system suitable for critical environments with a high level of dust.

INTEGRATED CONTROL DEVICES

The NS series switches are also available in a version with a long housing, that has room for fitting 1 to 4 control devices, with the relevant contact blocks, on the same body of the safety device. This version has the same modular and orientation features as the NS switches.

To meet requirements for a range of uses, a number of different colour and types of control devices can be adopted such as, for example: buttons, emergency stop buttons (also available with external protection guard), indicator lights, selector switches. Button lenses are customizable by laser engraving.

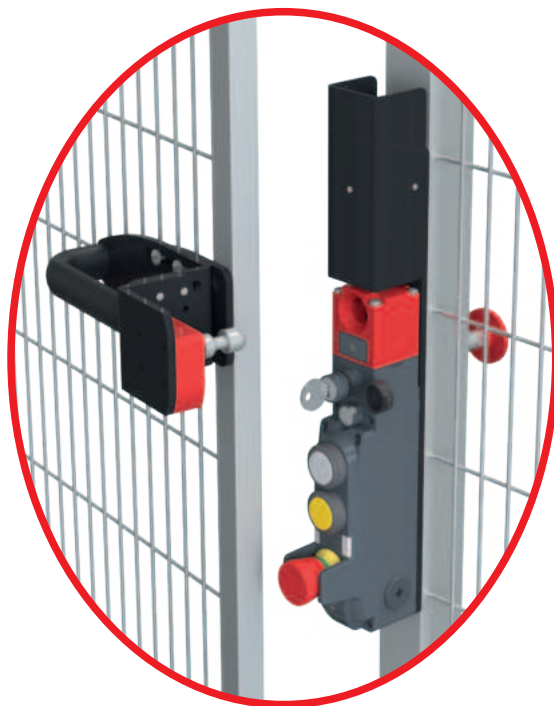
The control devices can be illuminated and protrude only slightly out of the housing thanks to the recessed housing hole. The result is a compact solution with direct access to control devices without needing to install them separately on the switch panel or in their own housing.

NG series safety switches with solenoid and RFID technology

NG series switches, like those of the NS series, are suitable for the management of guards on machines where the hazardous conditions persist even after the machine has been switched off; or, thanks to the 2 different hardware operating modes, they can also be used in situations where control of the locking of machine guards with or without inertia is required.

The robust, powder-coated, metal housing, combined with a high actuator holding force (up to 9,750 N), make the NG series switches suitable for applications on heavy and large metal guards, typically found in heavy industry (robotic metalworking presses and islands).

With the option to integrate illuminable pushbuttons, selectors, and an emergency stop button within the same housing, these switches offer a complete solution for automated plants, including those of large scopes.



JOINTED ACTUATOR FOR INACCURATELY CLOSING GUARDS

All NG series actuators are articulated, thereby allowing the actuator pin to be safely guided into the switch through the centring hole. As a result, the actuator and switch do not need to be precisely aligned during installation. In addition, the device can thereby be used on guards with a minimum actuation radius of 150 mm without the actuation pin needing to be angled.

INTEGRATED CONTROL DEVICES

The switch is also available with elevated cover. Control devices such as buttons, emergency stop buttons, indicator lights or selectors can thereby be attached directly to the switch together with corresponding contact blocks.

The result is a compact solution with direct access to control devices without needing to install them separately on the switch panel or in their own housing. The devices can be illuminated and, thanks to the PUSH-IN spring-operated connections, wiring is quick and intuitive.

The emergency-stop button is potentially exposed to the risk of accidental impacts due to its naturally protruding shape. A robust guard is available to protect the emergency-stop button from such impacts, integrated into the metal cover. This guard still guarantees optimal accessibility, with easy activation and resetting of the button.

SIX LEDS FOR IMMEDIATE DIAGNOSIS

As the LEDs have been designed for quick immediate diagnosis, the status of each input and output is highlighted by one specific LED. This makes it possible to quickly identify the interruption points in the safety chain, which device is released, which guard is opened and any errors inside the device. All of this at a glance, without needing to decode complex flashing sequences.

THROUGH HOLE TO PREVENT DUST AND DIRT DEPOSITS

The switch is provided with a through hole for inserting the actuator. Thanks to this unique feature, any dust that enters the actuator hole can always come out on the opposite side instead of remaining inside. Moreover, the lock pin is provided with a diaphragm seal, making the system suitable for critical environments with a high level of dust.

HOLDING FORCE OF THE LOCKED ACTUATOR

The strong interlocking system guarantees a maximum actuator holding force of $F_{\text{TEST}} = 9750 \text{ N}$. This is one of the highest values currently available on the market today, making this device suitable for heavy-duty applications.

NON-DETACHABLE HEAD AND RELEASE DEVICES

The head and the release device can be rotated but cannot be detached from each other. This makes the switch more secure since the problem of incorrect assembly by the installer cannot occur; in addition, the risk of damage is lower (loss of small parts, penetration of dirt, etc.).

PUSH-IN SPRING-OPERATED CONNECTIONS

The switch is provided with a PUSH-IN type spring-operated connection system on the inside. This technology allows wiring to be performed quickly and easily, as the wire just needs to be inserted into the appropriate hole in order to establish the electrical connection and automatically secure the wire. This operation can be performed with rigid or flexible wires with a crimped wire-end sleeve and requires no tools. Release is obtained by pressing the appropriate wire-releasing button.

ST series safety sensors with RFID technology

The ST series sensors, with their extremely compact dimensions and contactless RFID technology, guarantee a long-lasting solution in frequently opened and closed guards, including in hostile environmental conditions.

The option to choose between 5 different actuator types, with different fixing and actuating directions, makes these sensors extremely versatile; this means that they can be installed to all types of machines and guards, both large and small.

Once installation is complete, the plugs supplied make the casing completely smooth and sealed, preventing accumulation of dirt and dust; the IP67 and IP69K protection degree allows washing with pressurized water, making the ST sensors suitable for and valued in the food and pharmaceutical sector.



5 ACTUATOR TYPES

Designed for use in conjunction with the SM G+T and SM H+T series actuators, together they form a complete assembly, even from an aesthetic point of view; the ST G and ST H sensors are also compatible with all actuators available for the ST series, with either high or low coding level. This is particularly useful in applications where the actuator must have specific characteristics; such as, for example, increased activation distance (SM E+T actuators), compact installation dimensions (SM L+T actuators), or fixing holes positioned on two different sides (SM D+T).

MAGNETIC HOLDING FORCE OF THE ACTUATOR (ST H SERIES)

Devices of the ST H series can be ordered with a permanent magnet installed inside the housing, able to generate a holding force between sensor and actuator. This way, the guard can be kept closed even when there are vibrations or when there is a recoil during the closing stage. The magnetic holding force can be selected in three different magnitudes to best adapt to any usage situation.

MULTICOLOUR SIGNALLING LED

The ST G - ST H series sensors have a multicolour RGB signalling LED, which, using suitable transparent lenses, can be seen from both sides of the device. This allows fast, immediate diagnostics of the input and output operating states. This makes it possible to quickly identify the interruption points in the safety chain, active devices, open guards, and any internal device errors - all of which can be identified simply and intuitively.

INSENSITIVITY TO DIRT

The sensors are completely sealed and retain their safety characteristics even in the presence of dirt or deposits (not ferromagnetic material). This characteristic, combined with the design without recesses, makes them particularly suitable for use in the agricultural and food industries.

SPECIAL MULTITAG VERSIONS

Special versions of the device are available that have two or more actuators with high coding level, all of which can be recognised by the same sensor. The internal firmware of the sensor can be factory programmed, memorising a different device behaviour for each actuator when the actuator is in front of the sensor. The multitag function is particularly useful in machines with several work stations, that require various operating modes on the basis of the actuator recognised by the sensor (e.g.: interchangeable machine parts, position of robot, rotary tables, etc.).

OUTPUT WITH CABLE OR CONNECTOR

The electrical connection via M12 connector, integrated cable or integrated cable with M12 connector, makes the device suitable for the most diverse applications. The connector versions allow faster device replacement and installation, by making incorrect wiring connection impossible. Versions with cable can be ordered with various cable lengths.

