NS series RFID safety switches with lock

Description



These switches are used mainly on machines where the hazardous conditions persist even after the machine has been switched off. Mechanical parts such as pulleys, saw blades, etc., could continue to move after the machine is switched off. Thus, the switches can also be used if individual guards are only to be opened under certain conditions.

Versions with mode 1 and 3 (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.

Maximum safety with a single device

PL e + SIL 3

The NS series switches 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. Inside the control cabinet, the two electronic safety outputs must be connected to a safety module with OSSD inputs or to a safety PLC.

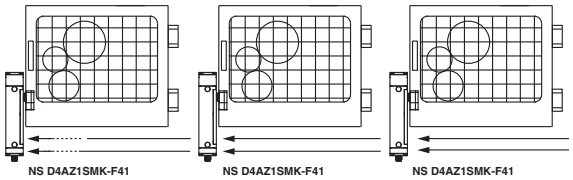
Series connection of several switches

PL e + SIL 3

One of the most important features of the NS series is the possibility of connecting 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.

This connection type is permissible in safety systems which have a safety module at the end of the chain that monitors the outputs of the last NS switch.

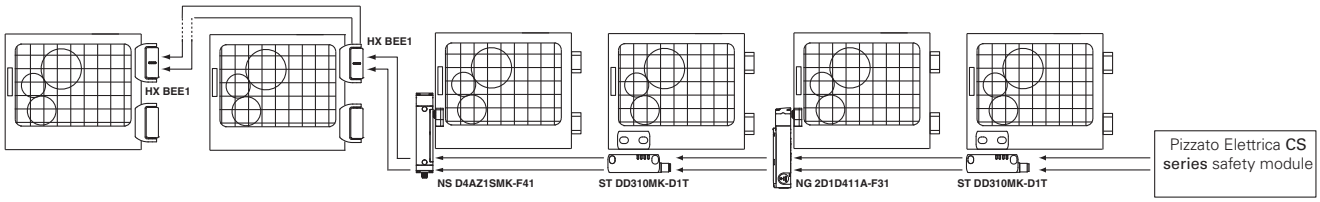
The fact that the PL e safety level can be maintained even with 32 sensors connected in series demonstrates the extremely secure structure of each single device.



Series connection with other devices

PL e + SIL 3

The NS series features two safety inputs and two safety outputs, which can be connected in series with other Pizzato Elettrica safety devices. This option allows the creation of safety chains containing various devices. For example, stainless steel safety hinges (HX BEE1 series), RFID sensors (ST series) and door lock sensors (NG series) can be connected in series while still maintaining the maximum PL e and SIL 3 safety levels.

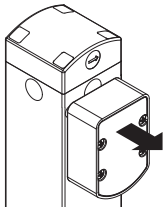


RFID actuators with high coding level

RFID

The NS series is 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.

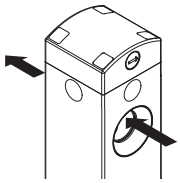
Holding force of the locked actuator



2100 N

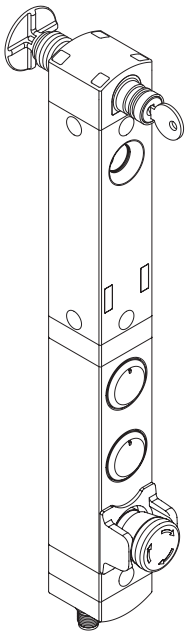
The strong interlocking system guarantees a maximum actuator holding force of F_{TEST} = 2100 N.

Dustproof



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



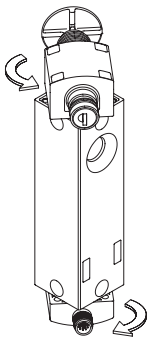
The NS series switches are also available in a version with a long housing, that has room for fitting 1 to 4 control devices, with the relevant contact blocks, on the same body of the safety device. This version has the same modular and orientation features as the NS switches.

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.

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.

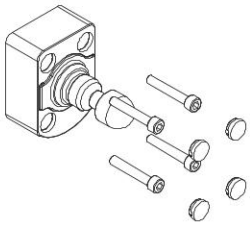
The fastening screws are provided with protection caps to prevent dirt build-up and thereby simplify cleaning.

Six LEDs for immediate diagnosis



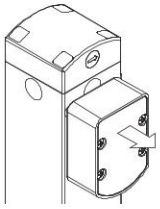
As the LEDs have been designed for quick immediate diagnosis, the status of each input and output is highlighted by one specific LED. This makes it possible to quickly identify the interruption points in the safety chain, which device is released, which guard is opened and any errors inside the device.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

Protection against tampering



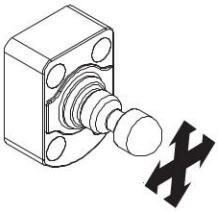
Each actuator of the NS series is supplied with four snap-on protection caps. Not only do the caps prevent dirt from accumulating and simplify cleaning, they also block access to the fastening screws of the actuator. As a result, standard screws can be used instead of tamper-proof screws.

Holding force of the unlocked actuator



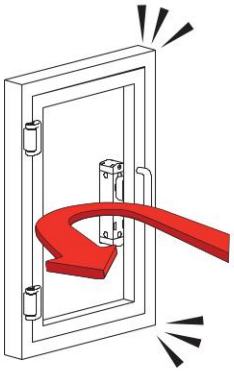
The inside of each switch features a device which holds the actuator in its closed position. Ideal for all those applications where several guards are unlocked simultaneously, but only one is actually opened. The device keeps all the unlocked guards in their position with a retaining force of approx. 20 N, stopping any vibrations or gusts of wind from opening them.

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.

Function for protecting against recoil forces

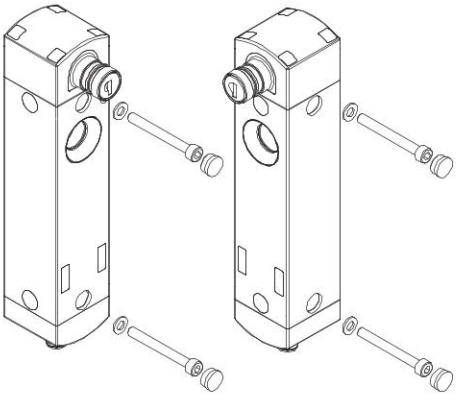


If a guard is closed too quickly or with so much force that the recoil would cause it to open again, a special function in the NS switch prevents locking. This function prevents the immediate locking of the guard if the lock signal is applied. This protects the switch against recoil forces that occur during instantaneous locking, thus avoiding possible damage to the device.

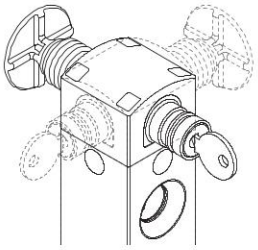
Front and side mounting

Integrated in the housing of the NS series is a hole for inserting the actuator pin. Fixing holes are also provided in the robust body for front and side mounting.

This makes it easier to mount the switch during lateral installation: the switch is directly mounted without needing to rotate the module that contains the hole for inserting the actuator pin. The fixing holes can be sealed with the protection caps provided for this purpose. Dirt deposits and tampering attempts are thereby prevented.



Key release device and escape release button



The key release device (auxiliary release) is used to permit unlocking of the actuator only by personnel in possession of the key. The device also functions with no power supply and, once actuated, prevents the guard from being locked.

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 (see accessories).

Both devices can be positioned on the four sides of the switch. As a result, it can be installed both towards the interior and towards the exterior of the machine.

High protection degree

IP69K
IP67

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).

Three safety output actuation modes

MODE 1
MODE 2
MODE 3

The device is available with 3 different actuation modes for safety outputs:
- mode 1: safety outputs active with inserted and locked actuator, for machines with inertia;
- mode 2: safety outputs active with inserted actuator, for machines without inertia;
- mode 3: a first safety output active with actuator inserted and locked and a second safety output active with actuator inserted, for special applications.

External device monitoring

EDM

On request, the switch can be supplied with EDM function (External Device Monitoring). In this case, the switch itself checks the proper function of the devices connected to the safety outputs. These devices (usually relays or safety contactors) must send a feedback signal to the EDM input, which checks that the received signal is consistent with the state of the safety outputs.

Selection diagram

RELEASE AND OPERATING PRINCIPLE



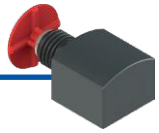
D•ST
Locked actuator with **de-energised** solenoid
key release at front



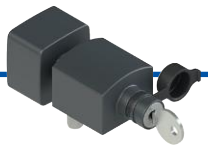
D•SE
Locked actuator with **de-energised** solenoid
key release at front and escape release button at back



D•CE
Locked actuator with **de-energised** solenoid
release by means of screwdriver at front and escape release button at back



E•TE
Locked actuator with **energised** solenoid
Without release at front and escape release button at back



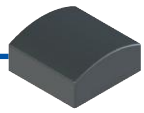
D•SR
Locked actuator with **de-energised** solenoid
front key release and rear remote escape release



D•CR
Locked actuator with **de-energised** solenoid
front screwdriver release and rear remote escape release



D•AZ
Locked actuator with **de-energised** solenoid
release by means of screwdriver at front



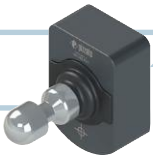
E•ZZ
Locked actuator with **energised** solenoid

ACTUATORS

SAFETY HANDLE



VN NS-F40
Actuator with low coding level



VN NS-F41
Actuator with high coding level

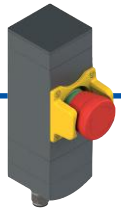


P-KUBE Krome
See page 255

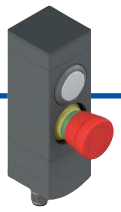




CONTROL DEVICES



N•••



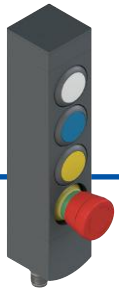
N•••



N•••



N•••



N•••



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CONNECTIONS

CONNECTIONS



M12 connector, axial

SMK	12-pole
SPK	8-pole for stand-alone connection
SQK	8-pole, for series connection with Y connectors



With axial cable

SA2	PVC, 12-pole, length 2 m
SB2	PVC, 8-pole, length 2 m, for stand-alone connections
SE2	PUR, 8-pole, length 2 m, for stand-alone connections



With 0.2 m cable length and M12 connector, axial

SM0.2	12-pole
SP0.2	8-pole for stand-alone connection
SQ0.2	8-pole, for series connection with Y connectors



Two M12 connectors, axial

SRK	M12 + M12



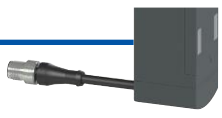
M12 connector, lateral, orientable

DMK	12-pole
DPK	8-pole for stand-alone connection
DQK	8-pole, for series connection with Y connectors



With cable, lateral, orientable

DA2	PVC, 12-pole, length 2 m
DB2	PVC, 8-pole, length 2 m, for stand-alone connections
DE2	PUR, 8-pole, length 2 m, for stand-alone connections



Cable, length: 0.2 m, with M12 connector, lateral, orientable

DM0.2	12-pole
DP0.2	8-pole for stand-alone connection
DQ0.2	8-pole, for series connection with Y connectors



M23 connector, axial

SSK	12-pole
STK	19-pole

For pin assignments of the connectors, see pages 196 to 200.

Product options

Sold separately as accessory

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article | options

NS D4AZ1SMK-F41N001E36LP30VS01

Operating principle

D	locked actuator with de-energised solenoid, mode 1
E	locked actuator with energised solenoid, mode 1
G	locked actuator with de-energised solenoid, mode 2
H	locked actuator with energised solenoid, mode 2
L	locked actuator with de-energised solenoid, mode 3
M	locked actuator with energised solenoid, mode 3

Inputs and outputs

3	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 reset input I3 **Note:** Supplied only together with actuator.
4	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 programming / reset input I3
5	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 signalling output O3: actuator inserted 1 signalling output O4: actuator locked 2 solenoid activation inputs IE1, IE2 1 programming / reset input I3 1 feedback input EDM I5 **Note:** Not available with mode 3.
6	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 enable signalling output O3 1 locked actuator or enable signalling output O4 2 solenoid activation inputs IE1, IE2 1 programming / reset input I3 1 enable input I5
7	2 safety inputs IS1, IS2 2 safety outputs OS1, OS2 1 enable signalling output O3 1 locked actuator or enable signalling output O4 2 solenoid activation inputs IE1, IE2 1 internal enable input I3 1 external enable input I5

Auxiliary release at front and back

AZ	release by means of screwdriver at front (1)
ST	key release at front (1)
SE	key release at front and escape release button at back (1)
CE	release by means of screwdriver at front and escape release button at back (1)
ZZ	without release (2)
TE	without release at front and escape release button at back (2)
SR	with front key release and rear remote escape release (3)
CR	with front screwdriver release and rear remote escape release (3)

(1) Only available for operating principle D, G and L.
(2) Only available for operating principle E, H and M.
(3) For the remote escape release, see page 221.

Software versions (1)

VS01	O4: fault signalling output
VS02	O3: inverted signalling output O4: inverted signalling output
VS03	O3: fault signalling output
VS04	O3: generates a voltage dip (0.2 s) when the device is blocked

(1) Available for non-safety inputs and outputs only.

Release button length

	for max. 15 mm wall thickness (standard)
LP30	for max. 30 mm wall thickness
LP40	for max. 40 mm wall thickness
LP50	for max. 50 mm wall thickness

Actuator extraction force

	actuator extraction force 20 N (standard)
E36	actuator freely removable
E37	actuator extraction force 40 N

Button configurations

N001	configuration 001
N002	configuration 002
N003	configuration 003
...	other configurations on request

Actuator

F40	actuator with low coding level VN NS-F40 the switch recognises any type F40 actuator
F41	actuator with high coding level VN NS-F41 the switch recognises one single type F41 actuator

Connection type

K	integrated connector (standard)
0.2	cable, length: 0.2 m, with M12 connector
2	cable, length: 2 m (standard)
...	...
10	cable, length: 10 m

Cable or connector type

A	PVC cable 12x0.14 mm²
B	PVC cable 8x0.34 mm², for stand-alone connections (1)
E	PUR cable, halogen-free, 8x0.34 mm², for stand-alone connections (1)
M	M12 connector, 12-pole (standard)
P	M12 connector, 8-pole, for stand-alone connections (1)
Q	M12 connector, 8-pole, for series connection with Y connectors (2)
R	Two M12 connector (3)
S	M23 connector, 12-pole (3)
T	M23 connector, 19-pole (3)

(1) without inputs IS1, IS2, I5 and without output O4
(2) without inputs IE2, I3, I5 and without output O3. Only available with "inputs and outputs" in version 3
(3) only for items with integrated control devices
For the complete list of possible combinations please contact our technical department.

Output direction, connections

D	cable or connector, lateral
S	cable or connector, axial

Code structure for actuator

VN NS-F40

Actuator

F40	actuator with low coding level the switch recognises any type F40 actuator
F41	actuator with high coding level the switch recognises one single type F41 actuator

NS series RFID safety switches with lock



Main features

- Actuation without contact, using RFID technology
- Digitally coded actuator
- SIL 3 and PL e also with series connection of up to 32 devices
- Max. actuator holding force: 2100 N
- SIL 3 and PL e with a single device
- Protection degree up to IP67 and IP69K
- 6 signalling LEDs

Quality marks:

EC type examination certificate: M6A 075157 0029
UL approval: E131787
TÜV SÜD approval: Z10 075157 0025
EAC approval: RU Д-IT.PA07.B.37848/24

In compliance with standards:

EN ISO 14119, EN 60947-5-3, EN 60947-1, EN 60204-1, EN ISO 12100, EN 60529, EN 61000-6-2, EN 61000-6-3, EN 61508-1, EN 61508-2, EN 61508-3, EN ISO 13849-1, EN ISO 13849-2, EN IEC 62061, EN 61326-1, EN 61326-3-1, EN IEC 63000, ETSI 301 489-1, ETSI 301 489-3, ETSI 300 330, UL 508, CSA C22.2 No. 14, BG-GS-ET-19

Features approved by UL

Electrical ratings: 24 Vdc Class 2, 0,25 A (versions without control devices), 0,3 A (versions with control devices).
Model NS with BN base module dimensions 40 mm by 38.5 mm by 145.5 mm:
- Input Supplied by 24 Vdc, Class 2 Source or limited voltage limited energy
- Input NS side: 24 Vdc, 0,15 A
- Input BN side: 24 Vdc, 0,048 A max. (Maximum four leds)
- Output NS side: 2 output 24 Vdc, 0,25 A plus 2 output 24 Vdc, 0,1 A
- Output BN side: 24 Vac/dc "Class 2" 0.25 A Pilot Duty (Maximum four Actuators, with maximum six contacts, NO or NC or both) or 0.18 A Pilot Duty (Maximum four Actuators, with maximum eight contacts, NO or NC or both)
- Emergency Stop Button 24 Vac/dc "Class 2" 0.1 A (Maximum one provided, golden contactss).

Model NS with BN base module dimensions 40 mm by 38.5 mm by 82.1 mm:
- Input Supplied by 24 Vdc, Class 2 Source or limited voltage limited energy
- Input NS side: 24 Vdc, 0,15 A
- Input BN side: 24 Vdc, 0,024 A max. (Maximum two leds)
- Output NS side: 2 output 24 Vdc, 0,25 A plus 2 output 24 Vdc, 0,1 A
- Output BN side: 24 Vac/dc "Class 2" 0.25 A Pilot Duty (Maximum two Actuators, with maximum four contacts, NO or NC or both) or 0.18 A Pilot Duty (Maximum two Actuators, with maximum four contacts, NO or NC or both)
- Emergency Stop Button 24 Vac/dc "Class 2" 0.1 A (Maximum one provided, golden contacts).

Environmental ratings: Types 1, 4X, 12, 13 (versions without control devices), Type 1 (versions with control devices).

Features approved by TÜV SÜD

Operating voltage:	24 Vdc ±10%
Ambient temperature:	-20°C…+50°C
Max. actuation frequency:	600 operating cycles/hour
Max. holding force F_{zh}:	1615 N
Protection degree:	IP67, IP69K

Tested in accordance with: 2006/42/EC, EN IEC 60947-5-2:2020/A11:2022, EN 60947-5-3:2013, EN 61508-1:2010 (SIL 2/3), EN 61508-2:2010 (SIL 2/3), EN 61508-3:2010 (SIL 2/3), EN IEC 62061:2021 (Maximum SIL 3), EN ISO 13489-1:2015 (cat. 2/4, PL d/e), EN ISO 14119:2013.
Please contact our technical department for the list of approved products.

Technical data

Housing made of glass fibre reinforced technopolymer, self-extinguishing and shock-proof
Versions with 12x0.14 mm² or 8x0.34 mm² integrated cable, length 2 m, other lengths from 0.5 to 10 m on request
Versions with integrated M12 stainless steel connector, single or double, or with M23 connector
Versions with 2 m cable and M12 connector, other lengths from 0.1 … 3 m on request

Protection degree:	IP67 acc. to EN 60529 IP69K acc. to ISO 20653 (Protect the cables from direct high-pressure and high-temperature jets)
Protection degree with control devices:	IP65 acc. to EN 60529

General data

Safety parameters	SIL	PL	Cat.	DC	PFH_D [h⁻¹]	$MTTF_D$ [years]
Monitoring function: actuator locked - Mode 1	3	e	4	High	1.23E-09	2657
Monitoring function: actuator present - Mode 2	3	e	4	High	1.22E-09	1840
Monitoring function: actuator locked - Mode 3	2	d	2	High	1.50E-09	2627
Monitoring function: actuator present - Mode 3	2	d	2	High	1.49E-09	3987
Dual-channel control for locking function of the actuator	3	e	4	High	2.04E-10	2254
Single-channel control for locking function of the actuator	2	d	2	High	2.04E-10	2254

Interlock with lock, no contact, coded:	type 4 acc. to EN ISO 14119
Coding level acc. to EN ISO 14119:	low with F40 actuator High with F41 actuator
Mission time:	20 years
Ambient temperature:	-20°C ... +50°C
Max. actuation frequency with actuator lock and release:	600 operating cycles/hour
Mechanical endurance:	1 million operating cycles
Max. actuation speed:	0.5 m/s
Min. actuation speed:	1 mm/s
Maximum force before breakage F_{TEST}:	2100 N acc. to EN ISO 14119
Max. holding force F_{ZH}:	1615 N acc. to EN ISO 14119
Maximum clearance of locked actuator:	4 mm
Released actuator extraction force:	~ 20 N

Power supply electrical data

Rated operating voltage U_e:	24 Vdc ±10% SELV/PELV
Operating current at U_e voltage:	40 mA min.; 0.4 A max. with activated solenoid; 1.2 A with activated solenoid and all outputs at maximum power
Rated insulation voltage U_i:	32 Vdc
Rated impulse withstand voltage U_{imp}:	1.5 kV
External protection fuse:	type gG fuse 2 A or equivalent device
Overvoltage category:	III
Electrical endurance:	1 million operating cycles
Solenoid duty cycle:	100% ED (continuous operation)
Solenoid consumption:	max. 9 W
Pollution degree:	3 acc. to EN 60947-1

Electrical data of inputs IS1/IS2/I3/IE1/IE2/I4/I5/EDM

Rated operating voltage U_{e1}:	24 Vdc
Rated current consumption I_{e1}:	5 mA

Electrical data of OS1/OS2 safety outputs

Rated operating voltage U_{e2}:	24 Vdc
Output type:	PNP type OSSD
Maximum current per output I_{e2}:	0.25 A
Minimum current per output I_{m2}:	0.5 mA
Thermal current I_{th2}:	0.25 A
Utilization category:	DC13; U_{e2}=24 Vdc, I_{e2}=0.25 A
Short circuit detection:	Yes
Overcurrent protection:	Yes
Internal self-resettable protection fuse:	1.1 A
Duration of the deactivation impulses at the safety outputs:	< 300 µs
Permissible capacitance between outputs:	< 200 nF
Permissible capacitance between output and ground:	< 200 nF
Activation time of safety outputs OS1 and OS2 after deactivation of safety inputs IS1, IS2:	typically 7 ms, max. 15 ms
Activation time upon unlocking the actuator:	typically 7 ms, max. 12 ms
Activation time upon removal of the actuator:	typically 120 ms, max. 200 ms
Maximum delay for EDM status change:	500 ms

Electrical data of O3/O4 signalling outputs

Rated operating voltage U_{e3}:	24 Vdc
Output type:	PNP
Maximum current per output I_{e3}:	0.1 A
Utilization category:	DC13; U_{e3}=24 Vdc, I_{e3}=0.1 A
Short circuit detection:	No
Overcurrent protection:	Yes
Internal self-resettable protection fuse:	1.1 A

RFID sensor data

Assured operating distance S_{ao}:		2 mm
Assured release distance S_{ar}:	Mode 1	6 mm (actuator not locked) 10 mm (actuator locked)
	Modes 2 and 3	10 mm (actuator locked and not locked)
Rated operating distance S_n:		3 mm
Repeat accuracy:		≤ 10 % s_n
Differential travel:		≤ 20 % s_n
RFID transponder frequency:		125 kHz
Max. switching frequency:		1 Hz

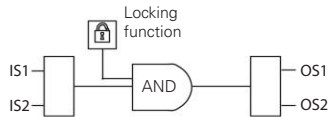
Compliance with the requirements of:

Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU, RED Directive 2014/53/EU, RoHS Directive 2011/65/EU, FCC Part 15.

Actuation mode of the OS1 and OS2 safety outputs

Mode 1

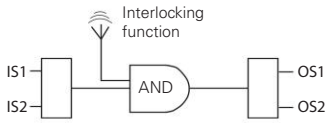
Safety outputs OS1 and OS2 are active when the actuator is inserted and locked.



In case of machines with or without inertia of the dangerous elements.
Safety category of the safety outputs: PL e, SIL 3.

Mode 2

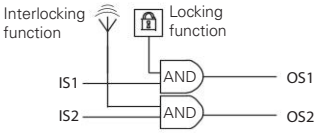
Safety outputs OS1 and OS2 are active when the actuator is inserted.



In case of machines without inertia of the dangerous elements.
Safety category of the safety outputs: PL e, SIL 3.

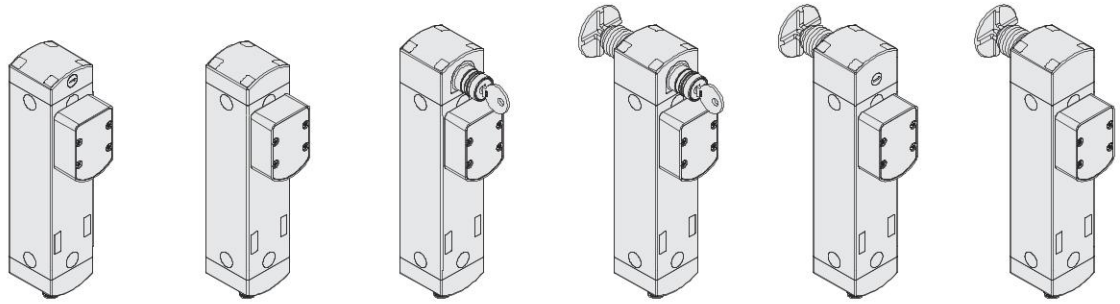
Mode 3

Safety output OS1 is active when the actuator is inserted and locked and IS1 is active. Safety output OS2 is active when the actuator is inserted and IS2 is active.



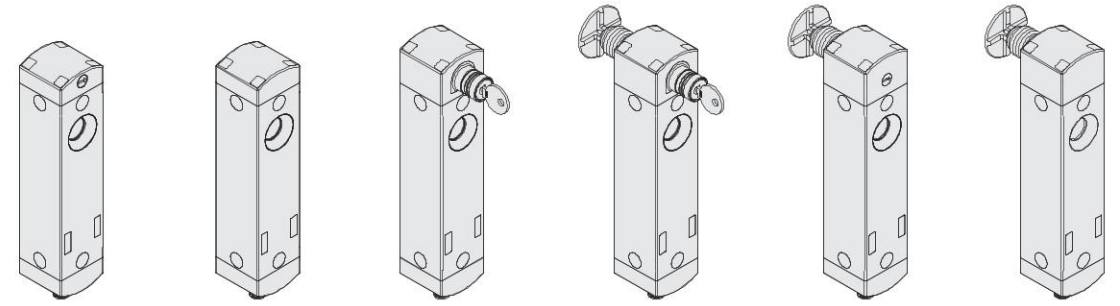
In case of machines with or without inertia of the dangerous elements.
Safety category of the safety outputs: PL d, SIL 2.

Selection table for switches with actuator with high coding level



Operating principle	Locked actuator with de-energised solenoid. With screwdriver release	Locked actuator with energised solenoid	Locked actuator with de-energised solenoid. With key release	Locked actuator with de-energised solenoid. With key release and escape release button	Locked actuator with de-energised solenoid. With screwdriver release and escape release button	Locked actuator with energised solenoid. With escape release button
Mode 1	NS D4AZ1SMK-F41	NS E4ZZ1SMK-F41	NS D4ST1SMK-F41	NS D4SE1SMK-F41	NS D4CE1SMK-F41	NS E4TE1SMK-F41
Mode 2	NS G4AZ1SMK-F41	NS H4ZZ1SMK-F41	NS G4ST1SMK-F41	NS G4SE1SMK-F41	NS G4CE1SMK-F41	NS H4TE1SMK-F41
Mode 3	NS L4AZ1SMK-F41	NS M4ZZ1SMK-F41	NS L4ST1SMK-F41	NS L4SE1SMK-F41	NS L4CE1SMK-F41	NS M4TE1SMK-F41

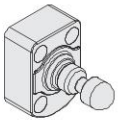
Selection table for switches



Operating principle	Locked actuator with de-energised solenoid. With screwdriver release	Locked actuator with energised solenoid	Locked actuator with de-energised solenoid. With key release	Locked actuator with de-energised solenoid. With key release and escape release button	Locked actuator with de-energised solenoid. With screwdriver release and escape release button	Locked actuator with energised solenoid. With escape release button
Mode 1	NS D4AZ1SMK	NS E4ZZ1SMK	NS D4ST1SMK	NS D4SE1SMK	NS D4CE1SMK	NS E4TE1SMK
Mode 2	NS G4AZ1SMK	NS H4ZZ1SMK	NS G4ST1SMK	NS G4SE1SMK	NS G4CE1SMK	NS H4TE1SMK
Mode 3	NS L4AZ1SMK	NS M4ZZ1SMK	NS L4ST1SMK	NS L4SE1SMK	NS L4CE1SMK	NS M4TE1SMK

To order a product with lateral connection replace character **S** with character **D** in the order codes shown above. Example: NS D4AZ1**S**MK → NS D4AZ1**D**MK
To order a product with EDM input replace number **4** with number **5** in the codes shown above. Example: NS D**4**AZ1SMK → NS D**5**AZ1SMK
Legend: interlock with lock monitoring acc. to EN ISO 14119

Selection table for actuators



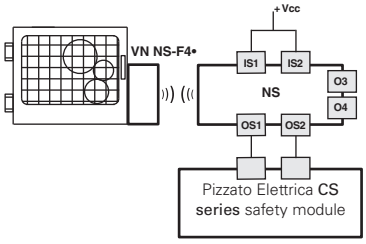
Coding level acc. to EN ISO 14119	Article
low	VN NS-F40
high	VN NS-F41

The use of RFID technology in NS series devices makes them suitable for several applications. Pizzato Elettrica offers two different versions of actuators, in order to best suit customers' specific needs.
Type F40 actuators are all encoded with the same code. This implies that a device associated with an actuator type F40 can be activated by other actuators type F40.
Type F41 actuators are always encoded with different codes. This implies that a device associated with an actuator type F41 can be activated only by a specific actuator. Another F41 type actuator will not be recognised by the device until a new association procedure is carried out (reprogramming). After reprogramming, the old actuator F41 will no longer be recognized.
Reprogramming of the actuator can be performed repeatedly.

Complete safety system

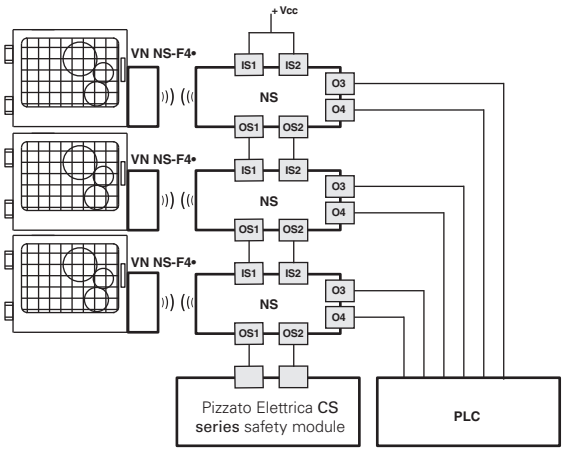
The use of complete and tested solutions guarantees the electrical compatibility between the NS series switches and the safety modules from Pizzato Elettrica, as well as high reliability. The switches have been tested with the modules listed in the adjacent table.

Switches	Compatible safety modules	Safety module output contacts		
		Instantaneous safety contacts	Delayed safety contacts	Signalling contacts
NS ••••1•••	CS AR-01•024	2NO	/	1NC
	CS AR-02•024	3NO	/	/
	CS AR-05•024	3NO	/	1NC
	CS AR-06•024	3NO	/	1NC
	CS AR-08•024	2NO	/	/
	CS AT-0••024	2NO	2NO	1NC
	CS AT-1••024	3NO	2NO	/
	CS MP••••••	see page 89 of the General Catalogue PLCs & Safety Modules 2025–2026		
	CS MF••••••	see page 121 of the General Catalogue PLCs & Safety Modules 2025–2026		

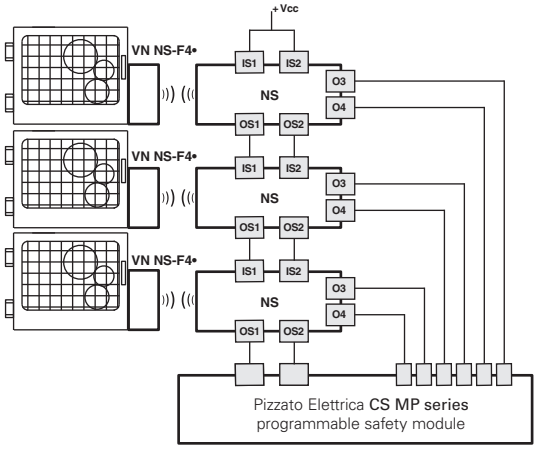


NS series switches can be used as individual devices provided that the safety outputs be evaluated by a Pizzato Elettrica safety module (see table for combinable safety modules).

All NS series switches can be connected, provided that compatibility is checked, to safety modules or safety PLCs with OSSD inputs.

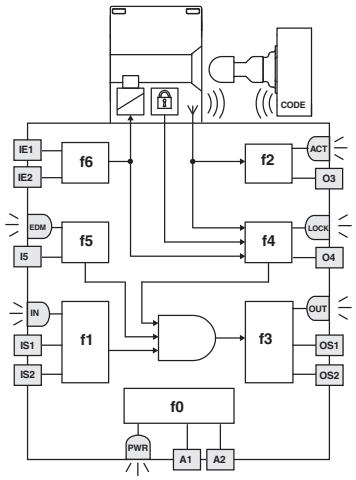


Possibility of series connection of multiple switches for simplifying the wiring of the safety system, whereby only the outputs of the last switch are evaluated by a Pizzato Elettrica safety module (see table with compatible safety modules). Each NS series switch is provided with two signalling outputs which are activated when the guard is closed (O3) or locked (O4). Depending on the specific requirements of the system that has been realised, the signals of the signalling outputs can be evaluated by a PLC.



Possibility of series connection of multiple switches for simplifying the wiring of the safety system, whereby only the outputs of the last switch are evaluated by a Pizzato Elettrica safety module of the CS MP series. Both the safety-relevant evaluation and the evaluation of the signalling outputs are performed by the CS MP series.
The examples listed above refer to applications with NS ••••1•••.

Internal wiring diagram

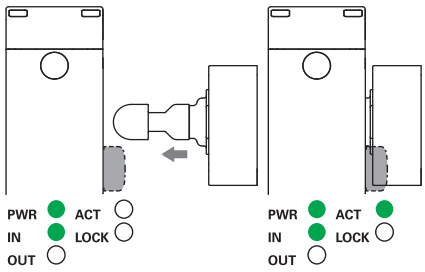


LED	Function
PWR	Power supply / self-diagnosis
IN	status of safety inputs
OUT	status of safety outputs
ACT	actuator state
LOCK	actuator locked
EDM	state of EDM inputs (NS •5••1•••)

The diagram on the side represents the 7 logic functions which interact inside the device.
Function f0 is a basic function and includes the monitoring of the power supply as well as internal, cyclical tests. Function f1 monitors the status of the device inputs, whereas function f2 monitors the presence of the actuator within the detection areas of the switch.
Function f4 checks the actuator lock condition.
Function f3 is intended to activate or deactivate the safety outputs and check for any faults or short circuits in the outputs.
In the EDM versions, the f5 function verifies the consistency of the EDM signal during safety output state changes.
The safety-related function, which combines the sub-functions mentioned above, activates the safety outputs according to the chosen operating mode:
- Both safety outputs OS1/OS2 for switches in mode 1 are activated only if both IS1/IS2 safety inputs are active and the actuator is inserted and locked;
- Both safety outputs OS1/OS2 for switches in mode 2 are activated only if both IS1/IS2 safety inputs are active and the actuator is inserted;
- The safety output OS1 for switches in mode 3 is activated only if the IS1 safety input is active and the actuator is inserted and locked, whereas the safety output OS2 is activated only if the IS2 safety input is active and the actuator is inserted.

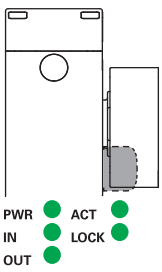
The f6 function verifies the coherence of the enable/disable signals of the actuator lock command.
The status of each function is displayed by the corresponding LED (PWR, IN, OUT, ACT, LOCK, EDM), in such a way that the general device status becomes immediately obvious to the operator.

Actuation sequence in mode 1

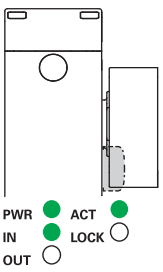


The switch is supplied with power (PWR LED on, green), the IS1 and IS2 inputs are enabled (IN LED on, green), the OS1 and OS2 safety outputs are disabled (OUT LED off). The actuator is outside of the actuation zone (LED ACT off).

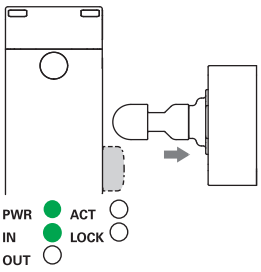
When the actuator is brought inside the safe actuation area (dark grey area), the switch turns on the ACT LED (green). In this position, the O3 signalling output (door-closed) is activated. The actuator is not locked (LOCK LED off).



The IE1, IE2 inputs can be used to lock the actuator (LOCK LED on, green). The OS1 and OS2 safety outputs are enabled (OUT LED on, green). The O4 signalling output is activated at the same time. The safe actuation area is extended in order to allow greater play for the actuator.



The IE1, IE2 inputs can be used to unlock the actuator (LOCK LED off). The switch disables the OS1 and OS2 safety outputs and turns off the OUT LED. The O4 signalling output is deactivated at the same time. The safe actuation area returns to the initial values.



When the actuator leaves the actuation limit area, the device turns off the ACT LED and the O3 signalling output.

Actuation sequence in mode 2 and mode 3

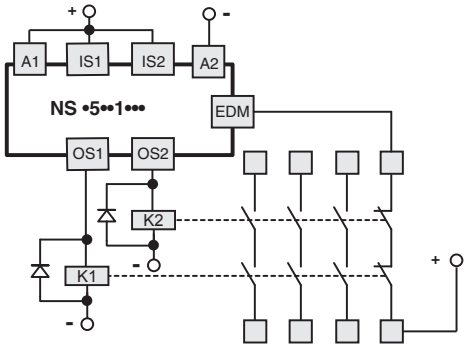
In contrast to the above mode 2 description, the safety outputs OS1 and OS2 are activated when the actuator is detected, and deactivated when the actuator is no longer detectable, in mode 3, the OS1 safety output is active with inserted and locked actuator and IS1 active, the OS2 safety output is active with inserted actuator and IS2 active.

Operating states

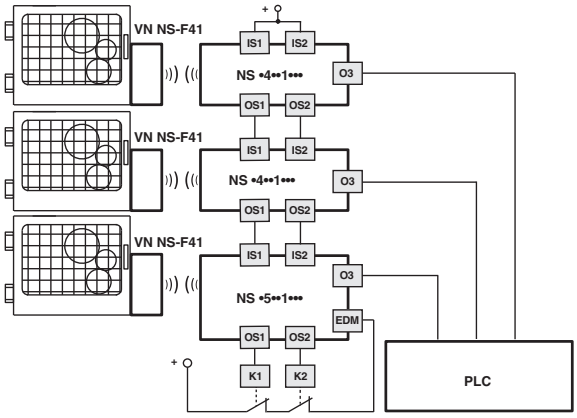
PWR LED	IN LED	OUT LED	ACT LED	LOCK LED	EDM LED (a)	Device state	Description
○	○	○	○	○	○	OFF	Device switched off.
◐	◐	◐	◐	◐	◐	POWER ON	Internal tests upon activation.
●	○	○	✳	✳	●	RUN	Safety inputs of the device not active.
●	●	✳	✳	✳	✳	RUN	Activation of safety inputs.
●	◐ blinking	○	✳	✳	✳	RUN	Safety inputs incoherence. Recommended action: check for presence and/or wiring of inputs.
●	✳	✳	✳	● blinking	✳	RUN	Incoherence of solenoid activation inputs IE1, IE2. Recommended action: check for presence and/or wiring of inputs.
●	✳	✳	✳	◐ blinking	✳	RUN	Auxiliary release activated. Deactivate the auxiliary release to lock the actuator
●	✳	✳	●	✳	✳	RUN	Actuator in safe area. O3 signalling output active.
●	✳	✳	◐ blinking	✳	✳	RUN	Actuator in limit area. Recommended action: move actuator closer.
●	✳	✳	●	●	○	RUN	Actuator in safe area and locked; O3 and O4 outputs active.
●	●	●	●	●	○	RUN	**Mode 1** Activation of safety inputs IS1, IS2. Actuator in safe area and locked. O3, O4, OS1 and OS2 outputs active.
●	●	●	●	✳	○	RUN	**Mode 2** Activation of safety inputs IS1, IS2. Actuator in safe area. O3, OS1 and OS2 outputs active.
●	●	●	●	●	○	RUN	**Mode 3** Actuator present, guard closed and locked, IS1 enabled, IS2 disabled, OS1 enabled, OS2 disabled
●	●	●	●	○	○	RUN	**Mode 3** Actuator present, guard closed and not locked, IS1 and IS2 enabled, OS1 disabled, OS2 enabled
●	◐ blinking	✳	✳	✳	✳	RUN	Actuator programming
◐ blinking	✳	✳	✳	✳	✳	RUN	Rapid flashing: supply voltage too high. Slow flashing: temperature outside admissible range
●	✳	● blinking	✳	✳	✳	ERROR	Error on safety outputs. Recommended action: check for any short circuits between the outputs, outputs and ground or outputs and power supply, then restart the device.
●	○	○	● blinking	○	○	ERROR	Actuator detection error. Check the physical integrity of the device and, in case of failure, please replace the entire device. If undamaged, realign the actuator with the switch and restart the device.
●	○	○	○	○	○	ERROR	Internal error. Recommended action: restart the device. If the failure persists, replace the device.
●	✳	○	✳	✳	●	RUN	EDM signal active (external relay off)[a]
●	●	●	●	●	○	RUN	EDM signal not active (external relay on)[a]
●	○	○	○	○	● blinking	ERROR	Error in the EDM[a] function

Legend:
○ = off
● = on
● blinking = blinking
◐ = changing colours
✳ = indifferent
(a) Available for NS •5••1••• versions only

External device monitoring (EDM)



The NS •5••1••• version, in addition to maintaining the operating and safety characteristics of the NS series, allows control of forcibly guided NC contacts of contactors or relays controlled by the safety outputs of the switch itself. As an alternative to the relays or contactors you can use Pizzato Elettrica expansion modules CS ME-03 (see page 79 General Catalogue - PLCs & Safety Modules 2025-2026). This check is carried out via the EDM input (External Device Monitoring as defined in EN 61496-1) of the switch.



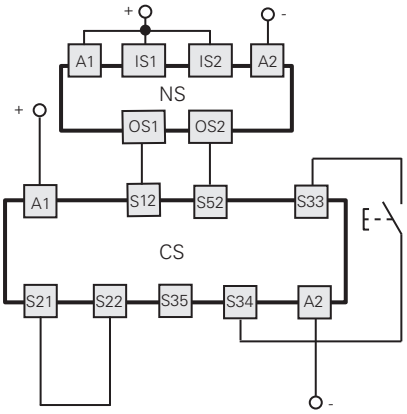
This version, with the IS safety inputs, can be used at the end of a series of NS switches, up to a maximum number of 32 devices, while maintaining the maximum PL e safety level and acc. to EN ISO 13849-1 and SIL 3 safety level acc. to EN IEC 62061.
This solution allows you to dispense with the safety module connected to the last device in the chain.
If present, the EDM function must be used.

Connection with safety modules

Connections with CS AR-08•••• safety modules

Input configuration with monitored start

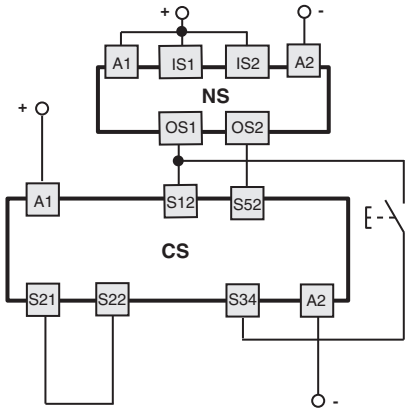
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS AR-05•••• / CS AR-06•••• safety modules

Input configuration with manual start (CS AR-05••••)
or monitored start (CS AR-06••••)

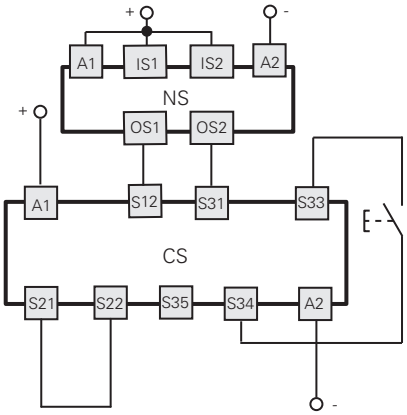
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS AR-01•••• / CS AR-02•••• CS AT-0••••• / CS AT-1••••• safety modules

Input configuration with monitored start

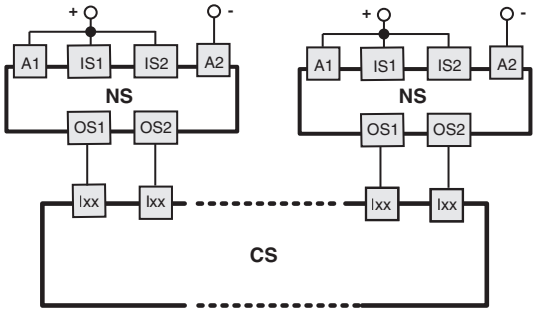
2 channels / Category 4 / up to SIL 3 / PL e



Connections with CS MF•••••, CS MP••••• safety modules

The connections vary according to the program of the module

Category 4 / up to SIL 3 / PL e

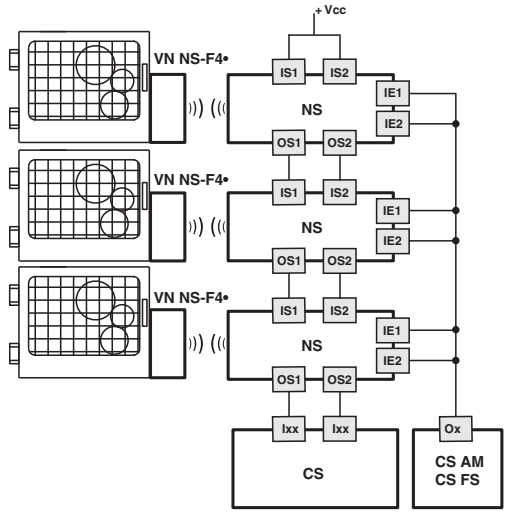


Application example on page 87
General Catalogue - PLCs & Safety Modules 2025-2026

Series connection of several switches

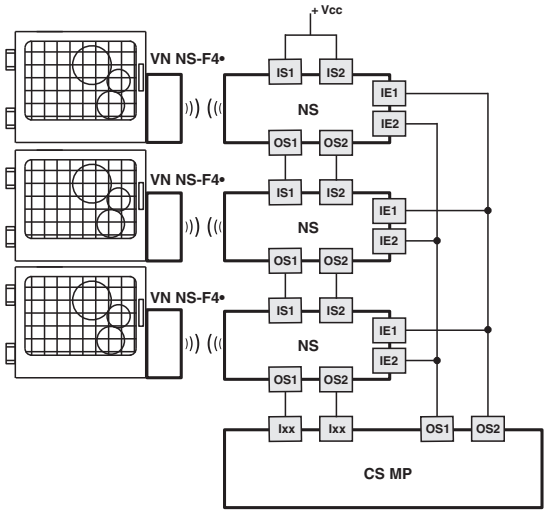
Monitoring function: actuator locked
2 channels / Category 4 / up to SIL 3 / PL e

Single-channel control for locking function of the actuator
1 channel / Category 2 / up to SIL 2 / PL d



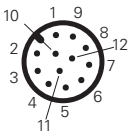
Monitoring function: actuator locked
2 channels / Category 4 / up to SIL 3 / PL e

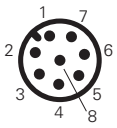
Dual-channel control for locking function of the actuator
2 channels / Category 4 / up to SIL 3 / PL e

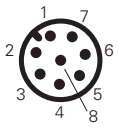


Safety switch internal connections

Versions with connector			Versions with cable			
NS ••••••M• M12 connector, 12-pole	NS ••••••P• M12 connector, 8-pole stand-alone connection	NS ••••••Q• M12 connector, 8-pole series connection with "Y" connectors	NS ••••••A• Cable 12x0.14 mm² outer diameter 6 mm	NS ••••••B•, NS ••••••E• Cable 8x0.34 mm² outer diameter 7 mm	Connection	
3	3	3	White	Blue	A2	Supply input 0 V
10	8	8	Purple	Red	IE1	Solenoid activation input
12	5	/	Red-Blue	Purple	IE2	Solenoid activation input
5	2	/	Pink	Black	O3	Signalling output, actuator inserted
9	/	5(b)	Red	/	O4	Signalling output, actuator inserted and locked
8	6	/	Grey	purple-white	I3	Actuator programming input / reset
1	1	1	Brown	Brown	A1	Supply input +24 Vdc
2	/	2	Blue	/	IS1	Safety input
6	/	6	Yellow	/	IS2	Safety input
11	/	/	Grey-Pink	/	I5	EDM input (a)
4	4	4	Green	Red-White	OS1	Safety output
7	7	7	Black	Black-White	OS2	Safety output



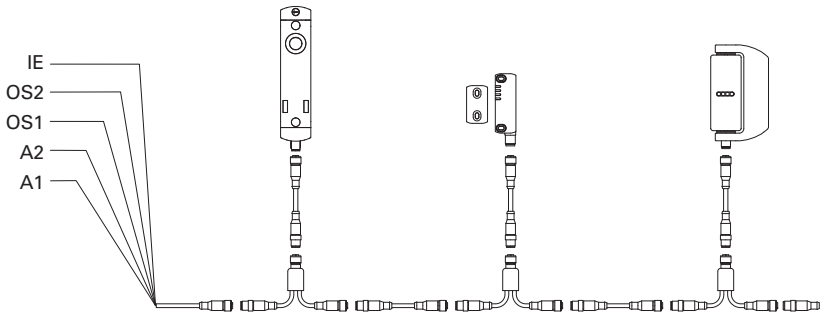




(a) Available for NS •5••1••• version only
(b) Available for 8-pole connector, not available for the end of a chain with Y connectors

Series connection

To simplify series connections of the devices, various M12 connectors are available that allow complete wiring.
This solution significantly reduces installation times while at the same time maintaining the maximum safety levels PL e and SIL 3 for the interlocking function.
For further information see page 365.



Switch with integrated control device unit for 1 device



NS D•AZ•SRK-N110

	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC	red	B2 B5 / B1 B4
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B



NS D•AZ•SRK-N111

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B2 B5 LED / B1 B3
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B



NS D•AZ•SRK-N112

	Description	Colour	Diagram
Device 1	Illuminated selector switch with handle with two positions 1NO	black	B2 B5 LED / B1 B3
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B



NS D•AZ•SRK-N187

	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC with guard	red	B2 B5 / B1 B4
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B



NS D•AZ•SRK-N188

	Description	Colour	Diagram
Device 1	Emergency stop button with rotary release 2NC+1NO with laser-marked guard "@"	red	B6 B8 B4 / B5 B7 B1
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N189

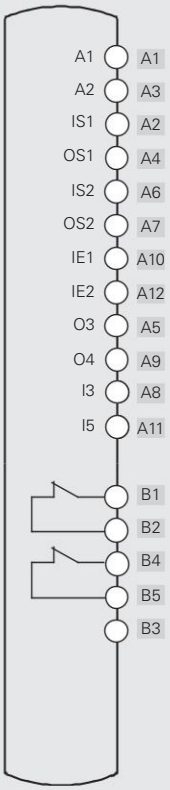
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B2 B5 LED / B1 B3
Connector	1 x M12, 12-pole + 1 x M12, 5-pole axial	/	A B

Internal connections (versions with integrated control device unit for 1 device)

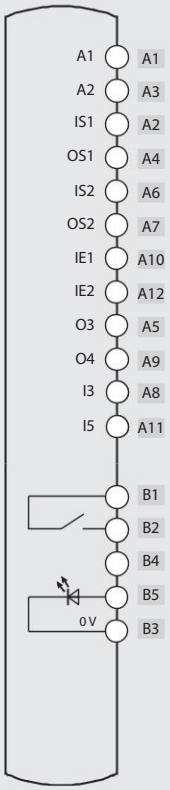
		Connection
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)
	I4	Solenoid activation input for single channel mode

(a) Available for NS •5••1•••-N••• version only

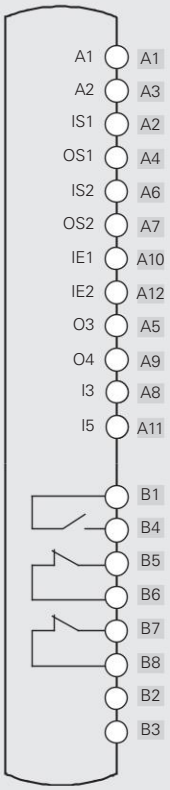
NS •••••SRK-N110
NS •••••SRK-N187



NS •••••SRK-N111
NS •••••SRK-N112
NS •••••SRK-N189



NS •••••SRK-N188



Switch with integrated control device unit for 2 devices



NS D•AZ•SRK-N113

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B2 LED B1 B3
Device 2	Emergency stop button with rotary release 2NC	red	B6 B8 B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N114

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B4 B2 LED B1 B3
Device 2	Emergency stop button with rotary release 2NC	red	B6 B8 B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N115

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B6 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B8 LED B2 B3
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N190

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B4 B2 LED B1 B3
Device 2	Emergency stop button with rotary release 2NC with guard	red	B6 B8 B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N191

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	blue	B4 B2 LED B1 B3
Device 2	Emergency stop button with rotary release 2NC with laser-marked guard "▽"	red	B6 B8 B5 B7
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B



NS D•AZ•SRK-N192

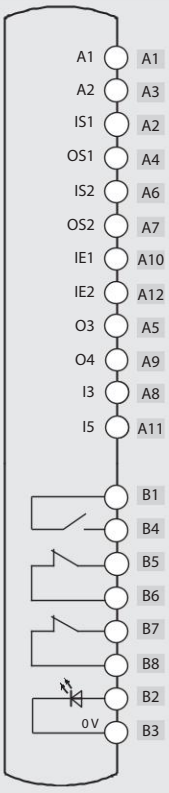
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B6 LED B4 B3
Device 2	Button, non-illuminated, spring-return 1NO	black	B1 B2
Connector	1 x M12, 12-pole + 1 x M12, 8-pole axial	/	A B

Internal connections (versions with integrated control device unit for 2 devices)

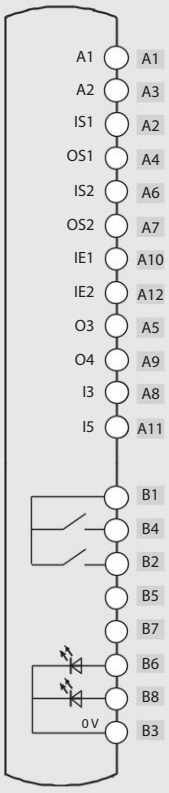
		Connection
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)

(a) Available for NS •5••1•••-N••• version only

NS •••••SRK-N113
NS •••••SRK-N114
NS •••••SRK-N190
NS •••••SRK-N191



NS •••••SRK-N115
NS •••••SRK-N192



Switch with integrated control device unit for 3 devices



NS D•AZ•SRK-N001

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B6 LED B5 B3
Device 3	Illuminated button, spring-return 1NO	yellow	B1 B12 LED B7 B3
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•SRK-N002

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B6 LED B5 B3
Device 3	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•STK-N003

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	12 18 LED 17 19
Device 2	Button, non-illuminated, spring-return 1NO	black	12 15
Device 3	Emergency stop button with rotary release 2NC	red	11 14 10 13
Connector	M23, 19-pole, axial	/	



NS E•ZZ•SRK-N174

	Description	Colour	Diagram
Device 1	Illuminated 2-position selector switch 1NO	black	B4 B2 LED B1 B3
Device 2	Indicator light	red	B6 LED B3
Device 3	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•SRK-N193

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B6 LED B5 B3
Device 3	Emergency stop button with rotary release 2NC with guard	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•SRK-N194

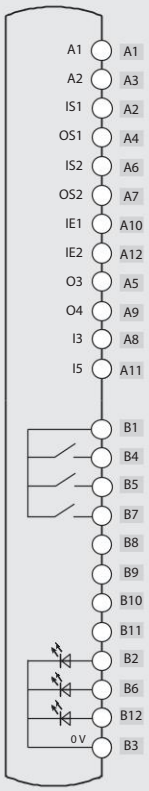
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	green	B1 B6 LED B5 B3
Device 3	Emergency stop button with rotary release 2NC with laser-marked guard "Ⓥ"	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B

Internal connections (versions with integrated control device unit for 3 devices)

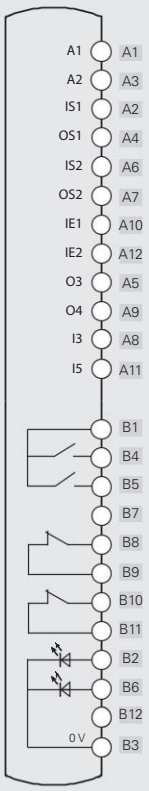
		Connection
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode [b]
	IE2	Solenoid activation input for double channel mode [b]
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input [a]
	I4	Solenoid activation input for single channel mode [c]

(a) Available for NS •5••1•••-N••• version only
(b) For versions with double M12 connector, 12-pole
(c) For versions with M23 connector, 19-pole

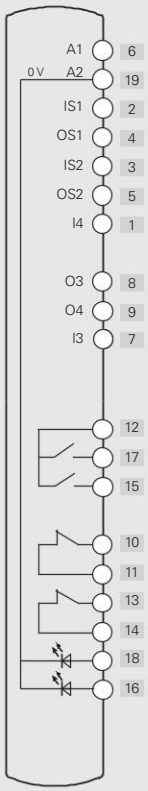
NS •••••SRK-N001



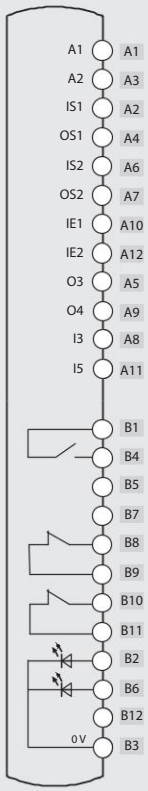
NS •••••SRK-N002
NS •••••SRK-N193
NS •••••SRK-N194



NS •••••STK-N003



NS •••••SRK-N174



Switch with integrated control device unit for 4 devices



NS D•SE•SRK-N085

	Description	Colour	Diagram
Device 1	Key selector switch with 2 fixed positions 1NO	black	B1 B4
Device 2	Illuminated button, spring-return 1NO	white	B1 B6 LED B5 B3
Device 3	Illuminated button, spring-return 1NO	blue	B1 B12 LED B7 B3
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•SRK-N005

	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B6 LED B5 B3
Device 3	Illuminated button, spring-return 1NO	yellow	B1 B12 LED B7 B3
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B



NS D•AZ•SRK-N007

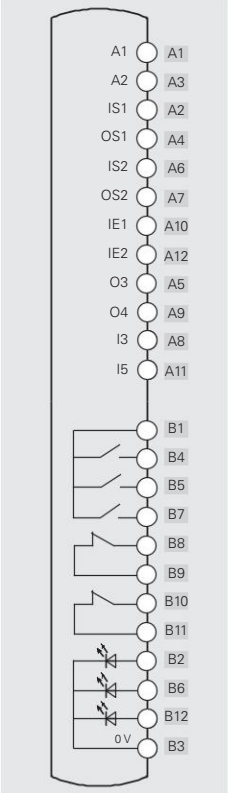
	Description	Colour	Diagram
Device 1	Illuminated button, spring-return 1NO	white	B1 B2 LED B4 B3
Device 2	Illuminated button, spring-return 1NO	blue	B1 B6 LED B5 B3
Device 3	Illuminated button, spring-return 1NO	green	B1 B12 LED B7 B3
Device 4	Emergency stop button with rotary release 2NC	red	B9 B11 B8 B10
Connector	2x M12, 12-pole, axial	/	A B

Internal connections (versions with integrated control device unit for 4 devices)

		Connection
Safety switch	A1	Supply input +24 Vdc
	A2	Supply input 0 Vdc
	IS1	Safety input
	OS1	Safety output
	IS2	Safety input
	OS2	Safety output
	IE1	Solenoid activation input for double channel mode
	IE2	Solenoid activation input for double channel mode
	O3	Signalling output, actuator inserted
	O4	Signalling output, actuator inserted and locked
	I3	Actuator programming input / reset
	I5	EDM input (a)

(a) Available for NS •5••1•••-N••• version only

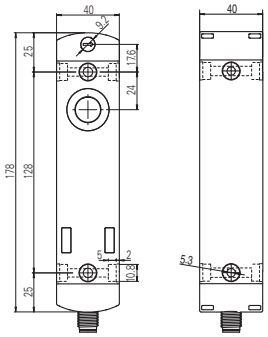
NS •••••SRK-N005
NS •••••SRK-N007
NS •••••SRK-N085



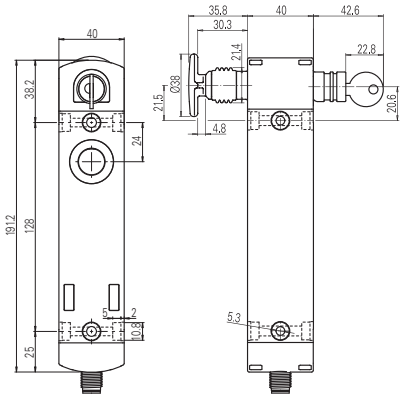
NS series RFID safety switches with lock

Dimensional drawings

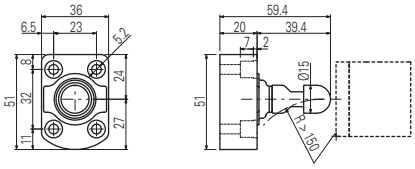
Device
NS ••AZ••MK
NS ••ZZ••MK



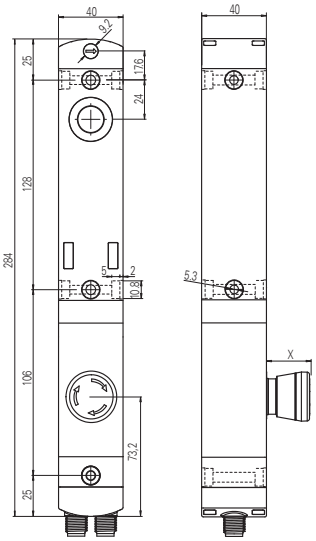
Device
NS ••ST••MK
NS ••SE••MK
NS ••CE••MK
NS ••TE••MK



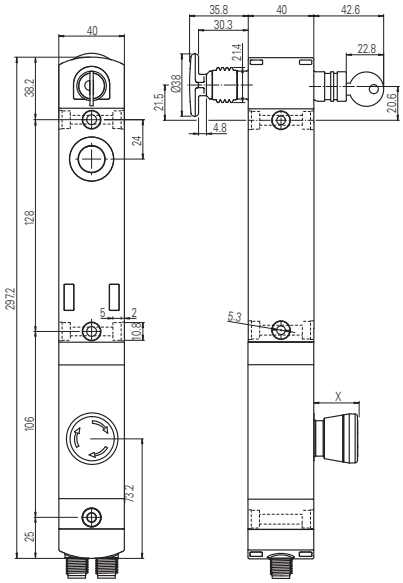
Actuator
VN NS-F4•



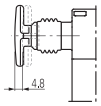
Device
NS ••AZ•S•K-N•••
NS ••ZZ•S•K-N•••



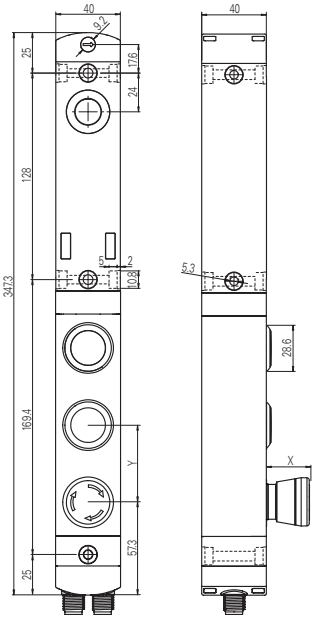
Device
NS ••ST•S•K-N•••
NS ••SE•S•K-N•••
NS ••CE•S•K-N•••
NS ••TE•S•K-N•••



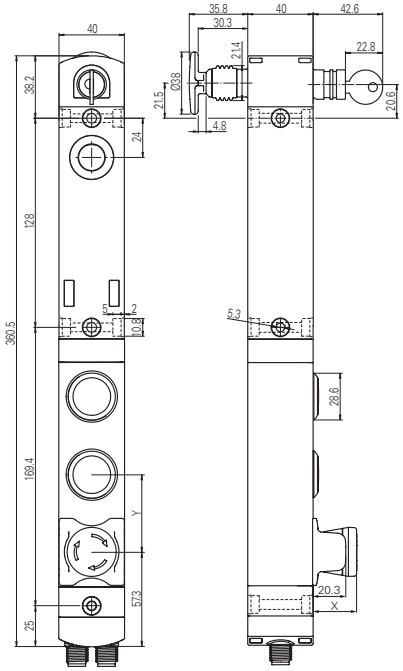
Release button travel



Device
NS ••AZ•S•K-N•••
NS ••ZZ•S•K-N•••



Device
NS ••ST•S•K-N•••
NS ••SE•S•K-N•••
NS ••CE•S•K-N•••
NS ••TE•S•K-N•••

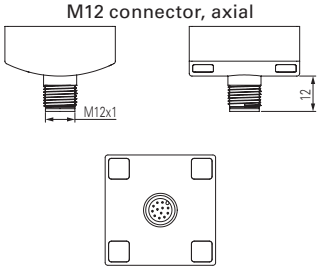


X = see page 204, Y = 47.5 mm (versions with 3 buttons); Y = 31.7 mm (versions with 4 buttons)

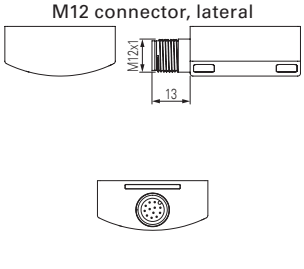
All values in the drawings are in mm

Output type

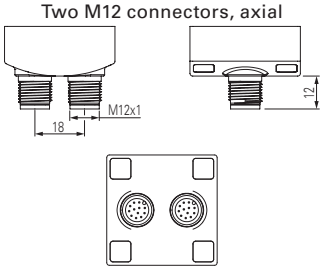
M12 connector, axial



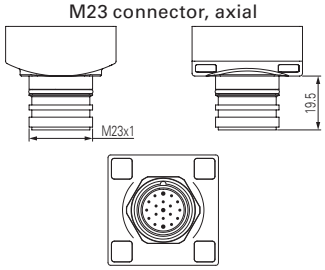
M12 connector, lateral



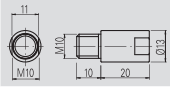
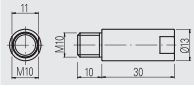
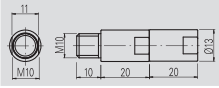
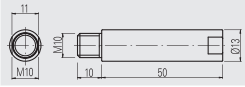
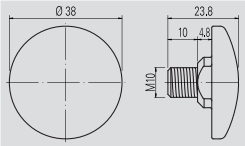
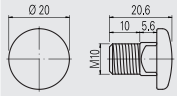
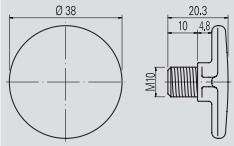
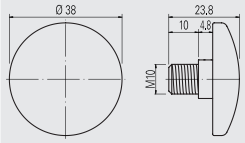
Two M12 connectors, axial

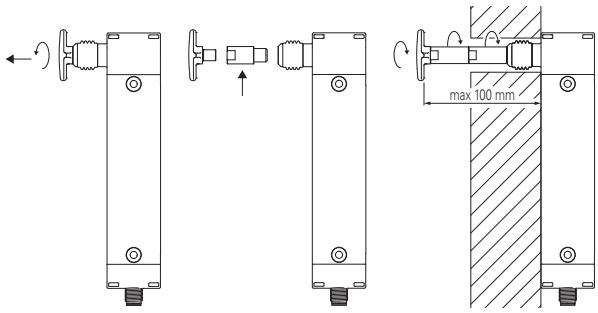


M23 connector, axial



Extensions for release button

Article	Description	Drawing
VN NG-LP30	Metal extension for release button. For max. wall thickness of 30 mm	
VN NG-LP40	Metal extension for release button. For max. wall thickness of 40 mm	
VN NG-LP50	Metal extension for release button. For max. wall thickness of 50 mm	
VN NG-LP60	Metal extension for release button. For max. wall thickness of 60 mm	
VN NG-ERB	Red metal release button	
VN NG-ERC	Compact red metal release button	
VN NG-ERP	Red technopolymer release button	
VN NG-ERX	AISI 316 stainless steel release button, unpainted. Guarantees a high resistance against corrosion and aggressive cleaning.	

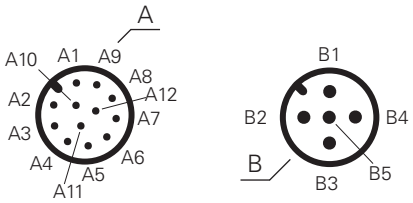


- Metal extensions can be combined with one another to achieve the desired length.
- Do not exceed an overall length of 100 mm between the release button and the switch. Make sure there is enough clearance between the release button and the switch so that it can be safely gripped and manually reset after it has been pressed.
- Use medium-strength thread locker to secure the extensions.

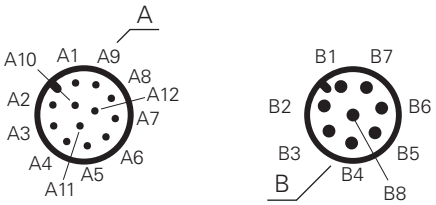
All values in the drawings are in mm

Electrical connector configurations

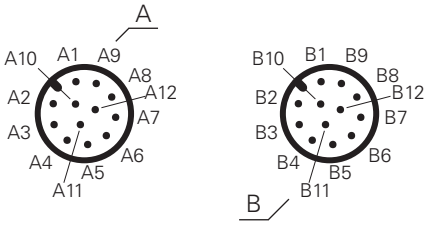
Two M12 connectors, 12-pole + M12, 5-pole



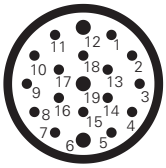
Two M12 connectors, 12-pole + M12, 8-pole



Two M12 connectors, 12-pole



M23 connector, 19-pole



Technical data of the integrated control devices

General data

Protection degree:	IP65 acc. to EN 60529
Mechanical endurance:	
- Spring-return button:	1 million operating cycles
- Emergency stop button:	50,000 operating cycles
- Selector switch:	300,000 operating cycles
- Key selector switch:	50,000 operating cycles 30,000 operating cycles including removal of the key
Safety parameter B_{10D}:	130,000 (emergency stop button)

Actuating force

Spring-return button:	min. 4 N	max. 100 N
Emergency stop button:	min. 20 N	max. 100 N
Selector switch:	min. 0.1 Nm	max. 1.5 Nm
Key selector switch:	min. 0.1 Nm	max. 1.3 Nm

Technical data of the contact blocks for standard spring return buttons, emergency stop buttons (2NC), selector switches and key selector switches

Material of the contacts:	silver contacts
Contact type:	self-cleaning contacts with double interruption
Thermal current I_{th}:	1 A
Rated insulation voltage U_i:	32 Vac/dc
Rated impulse withstand voltage U_{imp}:	0.5 kV
Utilization category of the contact block:	DC13; U_e = 24 Vdc, I_e = 0.55 A
LED supply voltage:	24 Vdc ± 15%
LED supply current:	12 mA per LED

Technical data of contact blocks for emergency stop button (2NC + 1NO)

Material of the contacts:	gold-plated contacts
Contact type:	self-cleaning contacts with double interruption
Thermal current I_{th}:	0.1 A
Rated insulation voltage U_i:	32 Vac/dc
Rated impulse withstand voltage U_{imp}:	0.5 kV
Utilization category of the contact block:	DC13; U_e = 24 Vdc, I_e = 0.1 A
LED supply voltage:	24 Vdc ± 15%
LED supply current:	12 mA

In compliance with standards:
IEC 60947-5-1, IEC 60947-5-5, EN ISO 13850

⚠ Installation for safety applications:
Always connect the safety circuit to the NC contacts (normally closed contacts) as stated in standard EN 60947-5-1.

Electrical data of M12 connector:

Max. operating voltage:	32 Vac/dc
Max. operating current:	max. 1.5 A

Electrical data of M23 connector:

Max. operating voltage:	32 Vac/dc
Max. operating current:	Max. 3 A

Accessories

Article	Description
VF KLB300	Set of two locking keys



Extra copy of the locking keys to be purchased if further keys are needed (standard supply: 2 units).
The keys of all switches have the same code. Other codes on request.

Lock-out device

Article	Description
LK S1D001	Lock-out device, mounting on the right side of the switch
LK S1S001	Lock-out device, mounting on the left side of the switch



Device made entirely of metal, to be fixed on the side of NS switches without any additional plate or support.
The front slider mechanically closes the actuator entry hole and functions as a shield for the RFID receiver antenna on the switch; thus ensuring an additional level of protection against accidental closure of the guard and untimely machine restart.
Allows insertion of up to 5 padlocks with a 3.5 mm arc diameter.

Available control devices

	Description	Colour	Spare part number	Combinable with contacts [1]	Protrusion (x) mm
	Illuminated button, spring-return	White Red Green Yellow Blue	VN NG-AC27121 VN NG-AC27123 VN NG-AC27124 VN NG-AC27125 VN NG-AC27126	1NO (1NC) (2NO) (1NO+1NC)	3
	Non-illuminated button, spring-return	Black	VN NG-AC27122	1NO (1NC) (2NO) (1NO+1NC)	3
	Non-laser-markable, illuminated, projecting spring-return push button	Red	VN NG-AC26018	1NO (1NC) (2NO) (1NO+1NC)	6,1
	Indicator light	Red Yellow Green Blue White	VN NG-AC26060 VN NG-AC26061 VN NG-AC26062 VN NG-AC26063 VN NG-AC26064	/	2,7
	Emergency stop button acc. to. EN ISO 13850 Rotary release Push-pull release	 Red Red	 VN NG-AC26052 VN NG-AC26055	2NC 2NC + 1NO [2]	26,4
	Illuminated emergency stop button acc. to. EN ISO 13850 Rotary release Push-pull release	 Red Red	 VN NG-AC26051 VN NG-AC26054	2NC	26,4
	Simple stop button Rotary release Push-pull release	 Black Black	 VN NG-AC26053 VN NG-AC26057	2NC 2NC + 1NO	26,4
	Illuminated selector switch with handle with 2 or 3 positions and transparent lens for LED    	 Black Black Black Black	 VN NG-AC26033 VN NG-AC26030 VN NG-AC26034 VN NG-AC26031	1NO (1NC) (2NO) (1NO+1NC)	16,8
	Key selector switch, 2 or 3 positions   	 Black Black Black	 VN NG-AC26043 VN NG-AC26040 VN NG-AC26041	1NO (1NC) (2NO) (1NO+1NC)	39 (a) 14 (b)
	Closing cap	Black	VN NG-AC26020	/	2,7
	Fixing key	Black	VN NG-AC26080	/	/

Legend: Maintained Spring-return Key extraction position (a) with key (b) without key

[1] The contacts in brackets are on request. Contact our technical department to verify the effective feasibility of the control device unit with the chosen combination of control devices.
[2] The NO contact with spring-return is only activated if the emergency stop button reaches the limit of travel. The signal of the NO contact is captured by analysing the rising edge.

To order buttons with marking:
add the marking code indicated in the chapter Accessories on page 379 to the article codes.
Example: Black spring-return button with "O" engraving.
VN NG-AC27122 → VN NG-AC27122-L1