



M12 Inductive Proximity Sensor NPN Normally Closed with 8mm / 10mm Non-flush Detection and IP67 Protection

Basic Information

- Place of Origin: Guangdong, China
- Brand Name: KRONZ
- Certification: CE
- Model Number: IN8-M12NC68-M0A/D, IN8-M12NC50-M0A/D, IN10-M12NC68-M0A/D, IN10-M12NC50-M0A/D
- Minimum Order Quantity: 10 pieces
- Price: Negotiable
- Packaging Details: Paper box packing
- Delivery Time: 5-8 working days
- Payment Terms: T/T
- Supply Ability: 100000 pieces per month

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Product Specification

- IP Rating: IP67
- Sensing Face Material: PBT
- Connection: M12 Connector
- Operating Temperature: -25...70
- Model: NPN N.C
- Construction Size: M12*1mm
- Highlight: **NPN Normally Closed Proximity Sensor, 8mm / 10mm Non-flush Inductive Proximity Sensor, IP67 M12 Sensor**

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Product Description

M12 Inductive Proximity Sensor NPN N.C — 8mm / 10mm Non-flush | KRONZ

M12 Inductive Proximity Sensor -- NPN Normally Closed (N.C) Series

8 mm / 10 mm non-flush detection * 10-30 V DC * IP67 * 4-pin M12 connector

Built for fail-safe circuits and wire-break detection. The output is closed during normal operation -- if the cable is cut, the supply drops, or the sensor fails, the output disappears and the PLC stops the line.

Models on this page: IN8-M12NC68-M0A/D, IN8-M12NC50-M0A/D, IN10-M12NC68-M0A/D, IN10-M12NC50-M0A/D

Product Overview

What this series solves

Normally-open sensors hide their faults. If the cable is cut, the connector is loose, or the supply drops, the PLC sees exactly the same state as "no metal present" -- and the line keeps running. The failure is silent until something crashes or a batch goes bad.

NPN normally-closed sensors invert that logic: the output is closed during normal operation, and any abnormal condition causes the output to disappear. The PLC detects "signal lost" and triggers a stop and an alarm. This is the fail-safe principle.

How NPN N.C works

NPN output is current sinking. The internal NPN transistor has its emitter tied to 0 V (L-). The N.C variant inverts the logic of N.O:

No metal target -> transistor on -> output pin is pulled to ~0 V, load is energized -> PLC input reads "1"

Metal enters the range -> transistor off -> output pin goes high-impedance, load de-energizes -> PLC input reads "0"

The load is wired between L+ (brown, Pin 1) and OUT (black, Pin 4) -- the same wiring position as NPN N.O. Only the internal logic differs. When you retrofit an NPN N.O station with NPN N.C, the cabinet wiring stays as it is.

When to choose NPN N.C

Your situation	Choose it?
You need fail-safe -- wire break must trigger an alarm	
Used as a safety gate, guard interlock, or in-position check	
Detecting that a part has not fallen off / is still in place	
PLC input module is sink / common-plus (Japanese PLCs)	
You only need a simple "target arrived" check, no safety logic	pick NPN N.O for simplicity
PLC is source / common-minus (Siemens and most European PLCs)	pick PNP N.C

IN8 vs IN10 -- how to pick between the two distances

IN8 series -- 8 mm detection range, 500 Hz switching -- faster response

IN10 series -- 10 mm detection range, 400 Hz switching -- more installation margin

Both share the M12 x 1 mm cylindrical thread and non-flush (unshielded) installation. Same datasheet, same mounting logic.

Key Features

Normally-closed logic -- faults surface, not hide: During normal operation the output stays on. Cable break, M12 connector loose, 24 V supply lost, sensor itself failed -- any of these kills the output and the PLC captures it instantly. Turns "silent failure" into "loud alarm."

Designed for safety interlocks and in-position checks: Safety gate closed -> metal flag enters the range -> output opens -> machine allowed to start. Gate opens -> output returns -> safety circuit acts. Same idea for confirming that a workpiece is still in the fixture (drop-out triggers the alarm).

Same wiring as NPN N.O -- zero rewiring when you upgrade: The load is wired between L+ and OUT, exactly as on NPN N.O. Upgrading from N.O to N.C requires no wiring change -- only invert the input logic in the PLC program. Retrofit projects are particularly easy.

NPN current-sinking, direct to Japanese PLCs: The output plugs straight into the sink input of Mitsubishi, Omron or similar modules -- no interposing relay.

Two detection ranges on one page: Choose 8 mm at 500 Hz for high-speed applications, or 10 mm at 400 Hz when the target has more play.

Non-flush (unshielded) -- longer range from the same M12 footprint: The unshielded structure lets the magnetic field spread sideways, giving a longer rated range than the flush variant. The trade-off is the free metal space around the sensing face -- see Configuration Details.

IP67 + -25...70 °C: IP67 per IEC 60529: dust-tight and protected against temporary immersion. Operating temperature covers -25 °C cold storage to +70 °C cabinet-side mounting.

Nickel-plated brass + PBT sensing face: Nickel-plated brass housing for impact and corrosion resistance. Blue PBT sensing face, wear-resistant and insensitive to metal swarf. Two hex nuts (17 mm across flats) resist long-term vibration loosening.

Field-replaceable M12 connector + triple electrical protection: 4-pin M12 A-coded male connector (IEC 61076-2-101) for quick cordset replacement on the floor. Built-in short-circuit, reverse-polarity and power-up pulse protection -- the sensor survives commissioning mistakes.

Technical Specifications

Common electrical parameters (all 4 models)

Parameter	Specification	Standard
Output function	NPN, Normally Closed (N.C)	IEC 60947-5-2
Output configuration	DC 3-wire	IEC 60947-5-2
Thread / form factor	M12 × 1 mm cylindrical	--
Installation type	Non-flush (unshielded)	IEC 60947-5-2
Operating voltage	10...30 V DC (±10%)	IEC 60947-5-2
Voltage drop	≤ 2.0 V	IEC 60947-5-2
Rated operating current	200 mA	IEC 60947-5-2
Leakage current	≤ 0.01 mA	IEC 60947-5-2
No-load current	≤ 10 mA (at 24 V DC)	IEC 60947-5-2
Switching hysteresis	< 15% of Sr	IEC 60947-5-2
Repeat accuracy	< 1.0% of Sr	IEC 60947-5-2
Electrical protection	Short-circuit / reverse-polarity / power-up pulse	IEC 60947-5-2
Switching-state indication	4 × LEDs, on while output is active	--
Connection	4-pin M12 connector, A-coded	IEC 61076-2-101

Per-model differences (key selection parameters)

Model	Sensing range Sn	Switching freq.	Body length	Thread length	Total length (straight)	90° height
IN8-M12NC68-M0A/D	8 mm (non-flush)	500 Hz	68 mm	42 mm	68 mm	34 mm
IN8-M12NC50-M0A/D	8 mm (non-flush)	500 Hz	50 mm	28 mm	50 mm	20 mm
IN10-M12NC68-M0A/D	10 mm (non-flush)	400 Hz	68 mm	42 mm	68 mm	34 mm
IN10-M12NC50-M0A/D	10 mm (non-flush)	400 Hz	50 mm	28 mm	50 mm	20 mm

Shared across all four: M12 × 1 mm thread, Ø7 mm sensing face, 67 mm barrel length (68-body) or 49 mm (50-body), 17 mm nut across flats.

Mechanical and environmental parameters

Parameter	Specification	Standard
Ambient operating temperature	-25 ... +70 °C	IEC 60068-2-14
Ingress protection	IP67 (dust-tight, protected against temporary immersion)	IEC 60529
Housing material	Brass, nickel-plated	--
Sensing face material	PBT (polybutylene terephthalate)	--
Connector thread	M12 × 1 mm male	IEC 61076-2-101
Mounting hardware	Two hex nuts, 17 mm across flats	--

NPN N.C output truth table

Metal target	Output transistor	Output pin level	LEDs	PLC input
Not in range	On	≈ 0 V	Lit	1
Enters range	Off (high-Z)	Pulled up to L+	Off	0
Wire break / power loss / sensor fault	No output	--	Off	0 -> alarm

Note the last row -- that is exactly what normally-closed brings to a safety circuit.

Configuration Details

Model selection

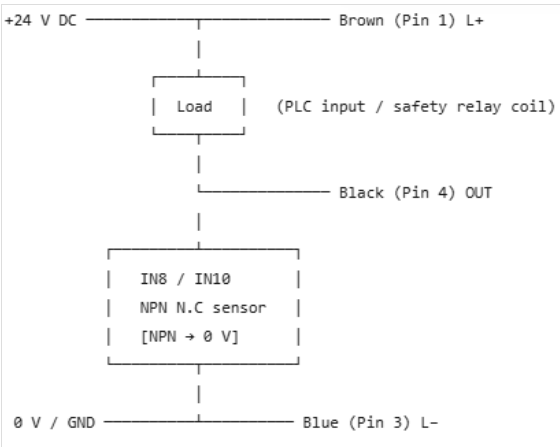
Model	Range	Frequency	Body	Recommended use
IN8-M12NC68-M0A/D	8 mm	500 Hz	68 mm	Safety-gate interlock, high-speed station presence check
IN8-M12NC50-M0A/D	8 mm	500 Hz	50 mm	Slim fixtures, tight safety points
IN10-M12NC68-M0A/D	10 mm	400 Hz	68 mm	Vibration-tolerant guard doors, generous safety margin
IN10-M12NC50-M0A/D	10 mm	400 Hz	50 mm	Limited space with 10 mm range required

Pin assignment -- 4-pin M12 A-coded

Pin	Wire colour (typical)	Signal	Description
1	Brown	L+	Supply positive, 10...30 V DC
2	White	N/C	Not connected (reserved)
3	Blue	L-	Supply 0 V (GND)
4	Black	OUT	NPN Normally Closed (N.C) switching output

Data note: The factory datasheet does not include a wiring diagram. The table above follows the M12 4-pin A-coded convention (IEC 61076-2-101). Verify against the wiring label packed with the sensor before commissioning.

Wiring diagram -- NPN N.C



Key point: The wiring position is identical to NPN N.O (load between L+ and OUT). Only the internal logic differs -- output is closed when no metal is present, and opens when metal arrives.

Safety-circuit application example

Safety gate CLOSED → metal flag enters range → N.C output OPENS → machine may start
Safety gate OPEN → metal flag leaves range → N.C output CLOSES → machine stops

Cable cut / 24 V lost / sensor fault
→ output disappears → instant stop and alarm (fail-safe)

Important: For personnel protection, a single sensor is not a substitute for a safety-rated circuit compliant with ISO 13849 / IEC 62061. Use this series for general industrial interlocks and fault alarming; consult engineering for safety-rated applications.

Dimensions (mm)

Dimension	68 mm body	50 mm body
Total length (straight M12 connector)	68	50
Barrel length (to connector shoulder)	67	49
Threaded section length	42	28
Sensing face diameter	Ø7	Ø7
90° right-angle connector height	34	20
Mounting thread	M12 × 1 mm	M12 × 1 mm
Nut across flats	17	17

Mounting requirements (non-flush)

Free metal space around the sensing face. Non-flush sensors let the magnetic field expand sideways. Without sufficient clearance, the effective range collapses. Recommended free space $\geq 3 \times S_n$ (≈ 24 mm for the 8 mm body, ≈ 30 mm for the 10 mm body). Side-by-side sensors also need adequate spacing to prevent mutual interference.

If you must flush-mount. This series is unshielded. Switch to a flush (shielded) variant if side clearance is impossible.

Tightening torque. Suggested maximum 15 N*m to avoid housing deformation.

Safety-point placement. Mount interlocks where they cannot be easily struck. Consider a protective bracket. Route the cable away from power conductors.

Typical applications

Industry	Use case
Safety guarding	Safety-gate / guard-door interlock, light-curtain bypass confirmation
Industrial automation	Workpiece in-position check (drop-out triggers alarm), fixture-clamp confirmation
Packaging machinery	Guard in-place, foil / carton missing detection
Material handling	Pallet in-position, stack-height over-limit detection
Machine tools	Guard interlock, tool in-position detection
Robotics	Safety-fence gate status, gripper part-retention confirmation

Related variants in the same M12 series

Output function	Description
NPN Normally Open (N.O)	Output closes when metal arrives -- simplest logic
PNP Normally Open (N.O)	Current-sourcing output, fits Siemens and other European PLCs
PNP Normally Closed (N.C)	Sourcing + fail-safe

Data Provenance and Assumption Log

Factory-measured values (cited directly from datasheet): operating voltage 10...30 V DC ($\pm 10\%$), voltage drop ≤ 2.0 V, operating current 200 mA, leakage current ≤ 0.01 mA, no-load current ≤ 10 mA (24 V), hysteresis $< 15\%$ Sr, repeat accuracy $< 1.0\%$ Sr, triple electrical protection, 4 × LED indication, $-25...70$ °C, IP67, brass nickel-plated + PBT, M12 connector, M12 × 1 mm thread, 8 mm / 10 mm non-flush, 500 Hz / 400 Hz, all dimensional values.

Standard-derived values (datasheet not specified; per IEC 60947-5-2): response time, standard target (Fe37), correction factors for non-ferrous metals. Not stated on this page; request confirmation from engineering before publishing.

Engineering guidance (not datasheet figures): free space $\geq 3 \times S_n$, nut torque $\leq 15 \text{ N}\cdot\text{m}$. Labelled "suggested" in the text.

Safety-rating statement: This series is not certified to ISO 13849 / IEC 62061. The notes above clearly mark this; no safety-rating claim is made.

No invented content. This document contains no fabricated performance figures, customer case studies, sales figures, or certifications.

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