



# S3N

**MINIATURE  
PHOTOELECTRIC SENSOR**







# S3N

## THE SENSOR YOU WERE SEARCHING FOR

- All models with visible and bright red emission
- LED and Laser emission models
- Multiple Background suppression functions
- Shiny and clear object detection
- Single, Double trimmer & Push Button models
- Diffuse proximity up to 100 cm
- Background suppression up to 800 mm (LED trimmer version)
- Polarized RRX 7 m (Red LED emission)
- RRX for transparent 2 m (Red LED emission)
- Polarized RRX 12 m (Red Laser emission)
- Through-beam 20 m and Laser 30 m
- Connection with 2 m Cable or M8 connector
- Rugged IP67 Plastic miniature case
- M3 threaded holes on the front side with metal inserts
- State of the art IO-Link connectivity with extended Smart Tasks



# A CONCENTRATE OF INNOVATION IN COMPACT DIMENSIONS

(11 X 22 X 32 mm)

S3N is the new Datasensing miniature photoelectric sensor line with state of art detection features, rugged mechanics, complete optical functions, bright red LED or safe Laser class 1 emission.

The range offers either cost effective one trimmer adjustment models, or two trimmer versions with Light and Dark output mode selection.

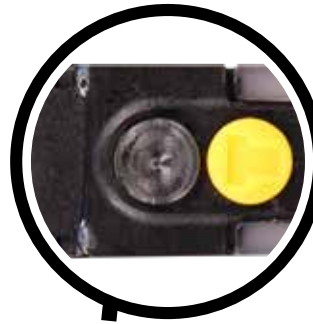
Furthermore, all models are available with Teach-in push button and smart IO-Link connectivity in COM2, offering advanced parametrization and monitoring functionalities, as well as predictive maintenance in your automation system.

Thanks to the improved mechanical features and the superior optical performance, the S3N sensor can easily solve the most varied detection applications in many industrial sectors, from automotive to electronics assembling, mounted on conveyors and material handling systems, or food & beverage and pharmaceutical and cosmetics manufacturing and packaging machines.





S3N has good availability of emission light with Red LED bright spot precise and shaped red laser class 1 emission and LED Red narrow beam as well



S3N User interface is very complete starting from entry level configuration up to expert detection function ensuring always an high grade of ease of use



S3N mechanics is very rugged and designed to simulate and prevent mechanical stress on the sensor during installation to avoid lack in performances



S3N has complete connectivity with M8 connector and 2 m cable output allowing the sensor mounting close to frame surface

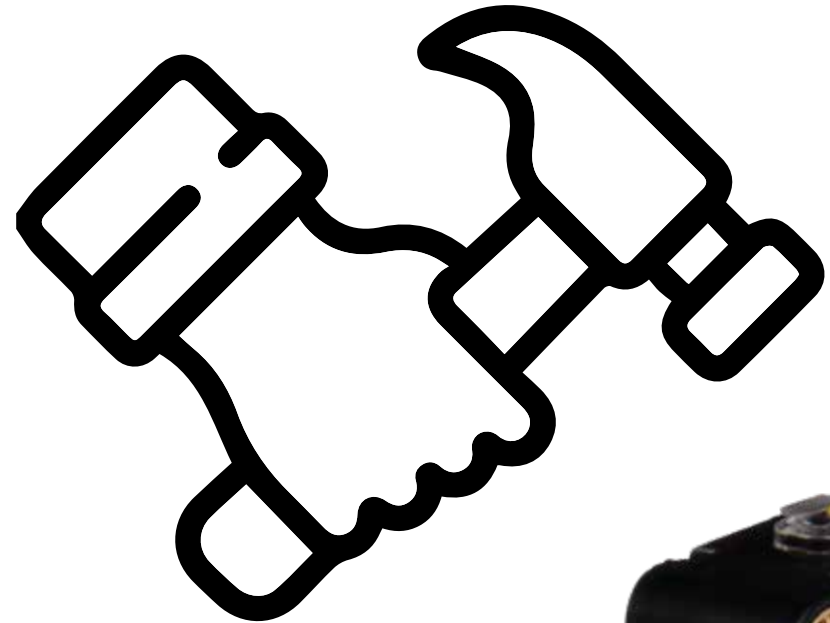
S3N is a very complete optical function series with innovative design solutions for application functions

# MECHANICAL ROUGHNESS

S3N mechanics has been designed to be reference for mechanical strength in the miniature series market segment. The S3N materials has been selected accurately to give and maintain over the time its state of art mechanical ruggedness. The sensor housing has been designed with advanced simulation CAD systems and customized plastic polymer reinforced with 30% of glass fiber to reach maximum strength in a very compact size.

The threaded metal inserts are designed to avoid any mechanical torsion or housing deformation tightening the mounting screws. The user interface of the product combines easy access and rugged mechanics to ensure a safe and easy sensor set-up.

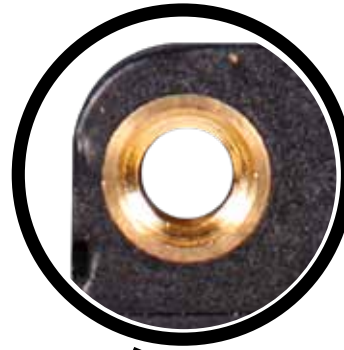
The metal M8-4 pins connector ensure fast and tight product connectivity, in cable models the cable output is designed to allow surface mounting maintaining the maximum mechanical strength.







The user interface actuators are designed combining mechanic strength and great usability



The mechanical insert are threaded and designed to avoid housing deformations tightening the mounting screws



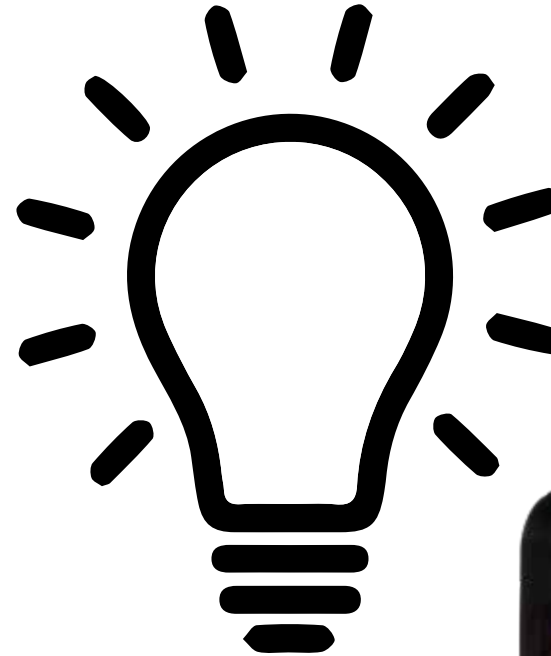
The M8 connector is full metal jacket to ensure the maximum strength connection, the cable connectivity is also available with 45° cable output to allow closer surface mounting



S3N sensor enclosure is made by a customized technical plastic polymer reinforced with 30% of glass fibers

# SMART AND EASY

S3N is designed to offer the best ease of use customer experience. The big trimmer and push button actuators are rugged and very well accessible by field installers and proper tools ensuring a fast and precise sensor setting. The push button has a very good tactile feeling for a fast and stable sensor adjustment. The sensor signalization are visible up 360° with bright and high light intensity to ease the sensor alignment in any critical application condition. The light emission is all in the visible red range spectrum easing the installer the target alignment the for precise, fast, long distance and small object the laser class 1 devices are available as well. Thanks to the DATASENSING ASIC proprietary technology the S3N series has a safe laser emission with state of art norms. The ASIC technology is also a big step enabling the S3N series to be flexible, highly customizable, with stat of art performances. The embedded IO-Link is also a great advantage for the customer for Monitoring and predictive maintenance.



 **New ASIC**

 **IO-Link**





S3N has a great variety of sensor setting taylored on customer application needs. The push button models have a great tactile feeling for a great user experience



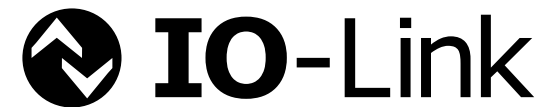
S3N has very bright LED signalization visible with 360° angle even at long distance easing the installation, sensor alignment and helping the customer to set special detections features in background suppressor models



S3N has good availability of emission light with Red LED brigh spot precise and shaped red laser class 1 emission to ease the alignment on target



S3N IO-Link push button models are provided of an additional Blue signalization LED to ease the installation with IO-Link connectivity



S3N has a very extended IO-link connectivity in COM2 and COM3 (Mark Reader) with smart task ease the setting in any particular application condition and ease the sensor monitoring and maintenance

# S3N

## PRIMARY PACKAGING APPLICATION

S3N has several innovative strengths for the primary packaging applications. TEACH-IN models thanks to its proprietary ASIC technology have several software algorithms that have been implemented in the smart system on chip controller to detect different material types with different color and surface. The S3N has expert modes for back ground suppressor models to adapt the sensor in challenging over the belt applications even when the conveyor could have different colour or dirty substances on the belt where usually other sensor can get instable conditions. The IO-Link parametrization is smart and extended to enable state of art monitoring and maintenance. The trimmer models are oriented to cost effective applications maintaining state of art detection features.





**PILLS DETECTION**

Detecting pills through transparent materials  
Laser emission is fast and precise



Detecting transparent objects like vials with background laser models or LED transparent models



**OBJECT WRAPPED IN TRANSPARENT FILM DETECTION**

Detecting any object wrapped in shiny or transparent film with several solution LED emission LED emission Back ground suppressor models with conveyor or shiny adjustment



**OBJECT DETECTION IN FLOW PACK MACHINE**

Over the belt applications are very challenging in food industries due to different formats film enclosures and irregular surfaces S3N is the state of art solution with multiple setting background suppressors Laser and LED emission models



**TRANSPARENT OBJECT DETECTION IN BOTTLING INDUSTRIES**

Detecting any transparent object of any material and color in bottling industries. Cap presence can be performed with laser retro reflex or label presence with diffused models



**MARK DETECTION**

Mark detection is used for cut and seal applications at very high speed with high grade of precision with mark reader model

# S3N

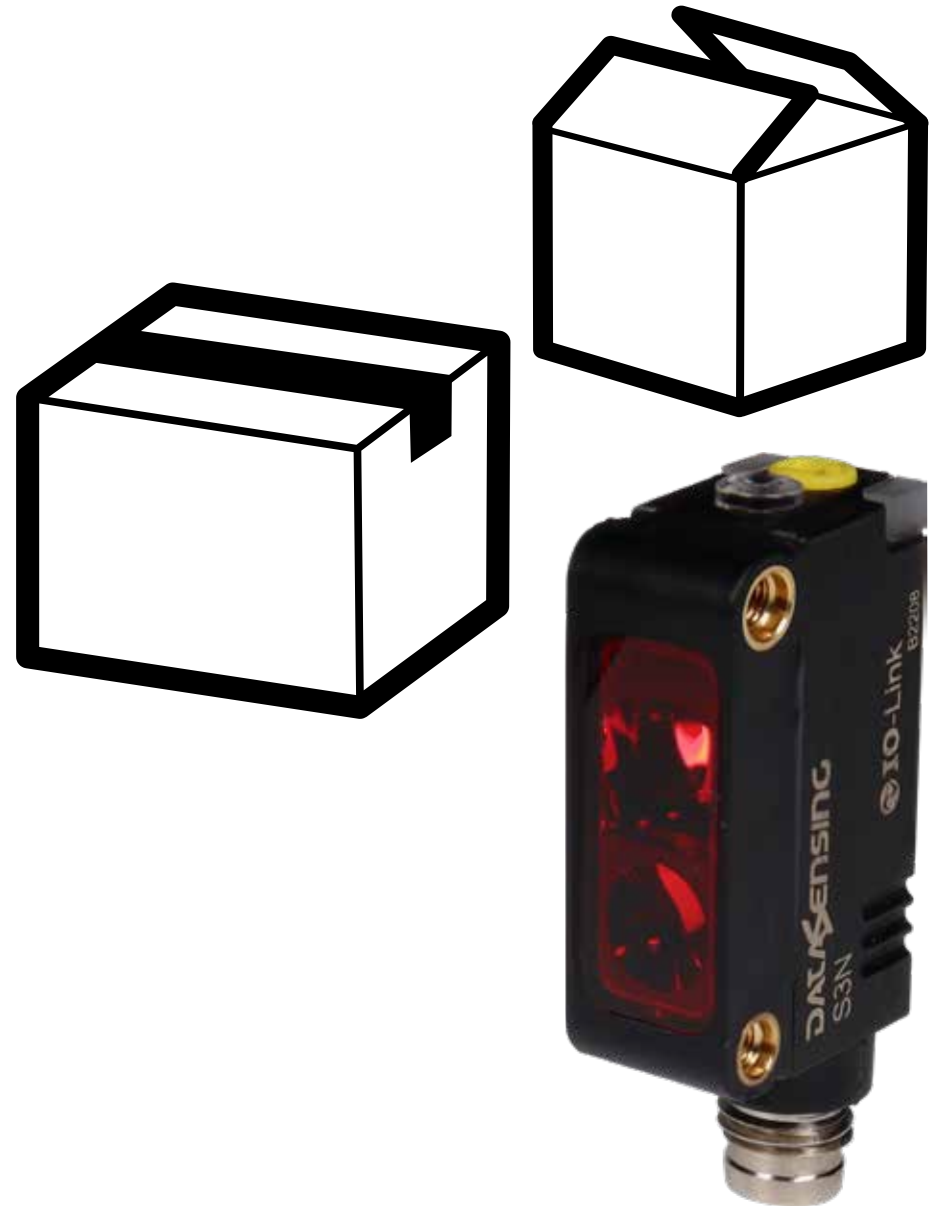
## SECONDARY PACKAGING APPLICATION

S3N has innovative strength also for the secondary packaging industries detecting easily objects on larger conveyors helping the customer with fast and reliable installations.

The TEACH-IN models can be successfully used when boxes surface are getting critical in Cosmetic, Pharma and Food industries.

The ASIC technology and IO-Link parametrization with smart task can help the customer for integrating helpful functions for monitoring and maintenance

The trimmer models are oriented to cost effective applications maintaining state of art detection features

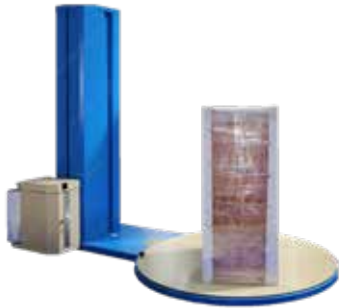






**WRAPPING BOTTLES WITH FILMS**

Bottling applications needs to detect transparent wrapping films for multiple packing S3N reliable transparent detection models are the right solution



**WRAPPING PALLETS**

Wrapping good on palletizers gets easier with S3N models for transparent or diffused background suppressor depending on machinery dimensions



**DETECTING BOXES ON CONVEYOR**

Detecting boxes with different shape, surface and color will get easy and reliable with S3N background suppressor models.



**CARDBOARD STOCK DETECTION**

Detecting stocked cardboard with thickness resolution gets easy with S3N retroreflex and Background suppressor with laser emission



**CARDBOARD POSITION**

Detecting cardboard in correct position can be solved with several S3N models Led emission diffused, background suppressor models with LED or Laser emission depending by target, speed precision requirements



**DETECTION FOR ROBOTIC PLIERS**

Robotic pliers will work fast and precise with S3N background suppressor models laser and LED reading the the presence on any object reliably.

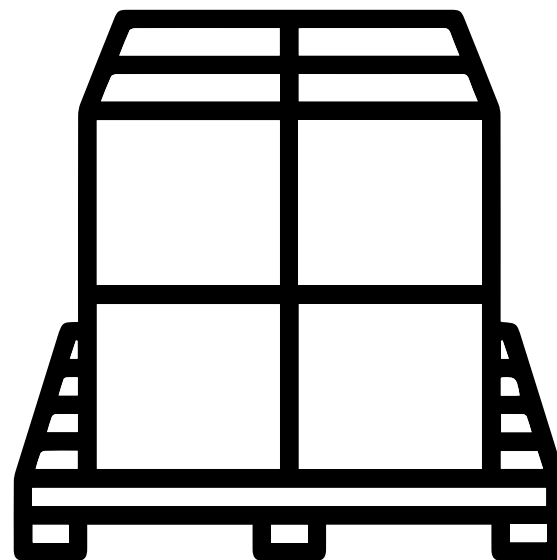
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## INTRALOGISTICS APPLICATION

S3N is a great solution also for intralogistics applications thanks to its good level of operating distances and its ASIC technology the sensor series has a high level of electrical and ambient light immunity. The S3N mechanical ruggedness is also a very important feature for this application field.

Usually, the intralogistics plants are very extended S3N with its IO-Link parametrization and smart task can help the customer during the plant installation and commissioning helping the productivity with advanced monitoring and predictive maintenance.

The trimmer models are oriented to cost effective applications maintaining state of art detection features.







### COMPLETING SAFETY CONTROL SYSTEM

Intralogistic object on conveyor can be detected for presence or to complete safety applications. S3N diffused and retroreflex models are the right and cost-effective solution.



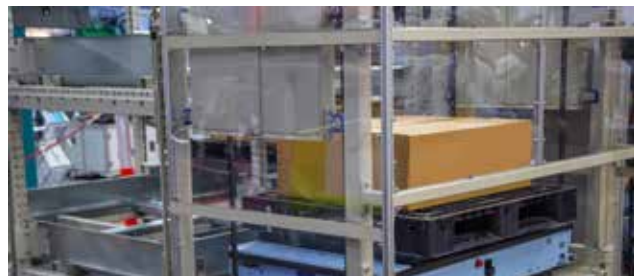
### CONVEYOR SORTER APPLICATIONS

Intralogistic sorters are usually very large installations in postal and courier applications. The S3N background suppressor, Diffused and Retroreflex are the right solution for cost-effective or demanding applications. The IO-Link is easing sorter station maintenance and monitoring, enabling easy remote control.



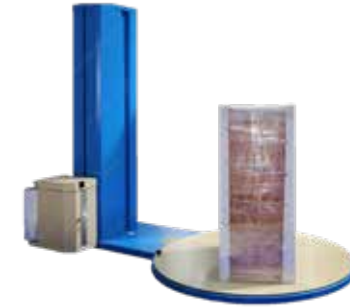
### EXTENDED CONVEYOR SYSTEMS

Intralogistic large conveyor plants can be getting easier to install, monitor, and maintain thanks to S3N IO-Link connectivity and communication.



### INTRALOGISTIC SHUTTLE APPLICATIONS

Shuttles handling and controlling are very important in the logistic market segment. The S3N can be a good solution companion for anticollision applications thanks to background suppressor models.



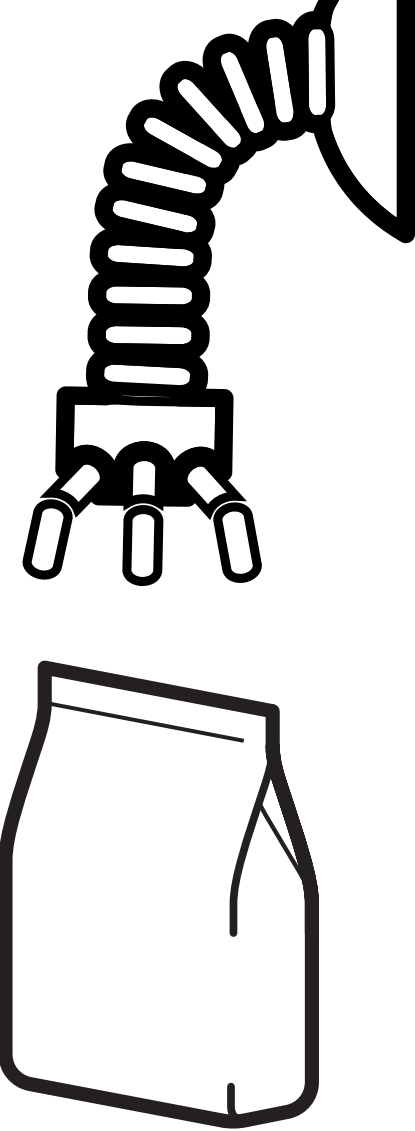
### WRAPPING PALLETS

Wrapping goods on palletizers gets easier with S3N models for transparent or diffused background suppressors depending on machinery dimensions.

# S3N

## MANUFACTURING APPLICATION

S3N is a very good solution in manufacturing applications. It can easily detect transparent, shiny metal and films, small objects with its precise and safe laser emission then it can be easily adjusted with TEACH IN push button or through the IO-Link communications implementing smart features for an easy integration. The S3N is the right choice for electronic and mechanic manufacturing industries easing integration, monitoring and predictive maintenance on any machinery. The trimmer models are oriented to cost effective applications maintaining state of art detection features.





Mechanic assembly line applications have to run different materials ranging from plastic to metal, S3N is a good solution to detect different materials with different shapes. S3N is the right choice thanks to a wide range of optical functions and settings. The electronic assembly line is also a successful applications field as well. S3N can detect very small objects precisely and fast with its safe and high performance laser models. IO-Link smart task will easily help the product integration in your projects enhancing your machine control.



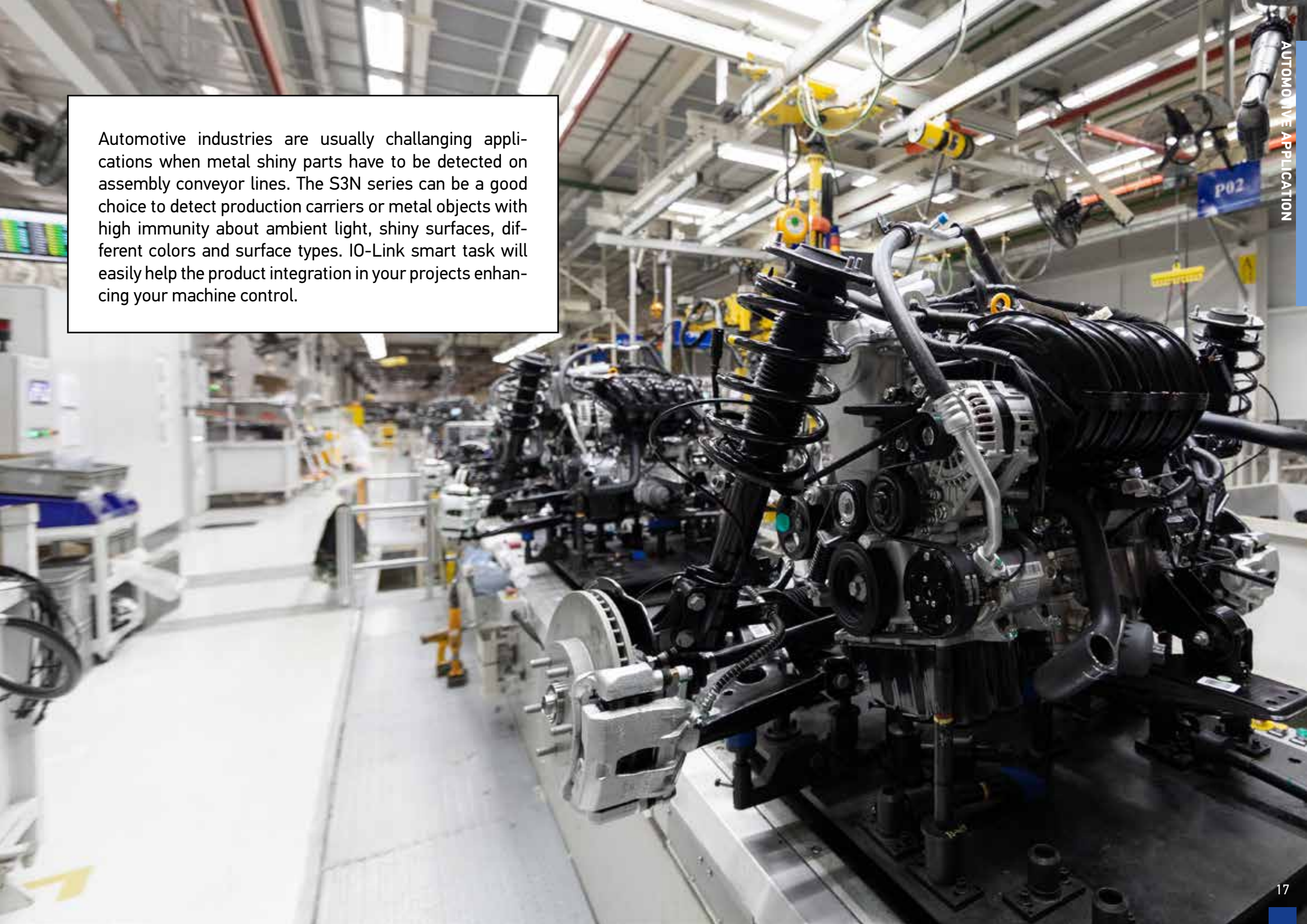
# S3N

## AUTOMOTIVE APPLICATION

S3N is offered with all visible red LED and safe Laser class 1 optic functions. The detection performances, the push button features, and smart IO-Link communication are very strategic features for today automotive applications where visible emission light and high integration sensor application are requested. The high electrical immunity and cross talk prevention together with state of art detection performances are very important for an easy automation integration. The S3N is easing integration, monitoring and predictive maintenance on any automotive application field. The trimmer models are oriented to cost effective applications maintaining state of art detection feature.



Automotive industries are usually challenging applications when metal shiny parts have to be detected on assembly conveyor lines. The S3N series can be a good choice to detect production carriers or metal objects with high immunity about ambient light, shiny surfaces, different colors and surface types. IO-Link smart task will easily help the product integration in your projects enhancing your machine control.











# A COMPLETE MINIATURE SENSOR LINE

S3N is the right solution by Datasensing for your application in the packaging industries. The automation applications are more and more requiring miniaturized device to detect materials in narrow spaces and compact machineries. The miniaturization must come with high performance and state of the art.





	S3N-PR-*-B0*-**	S3N-PR-*-C0*-**	S3N-PR-*-C1*-**	S3N-PR-*-FG0*-**
				
				
Optical Function	Polarized retroreflective	Diffuse narrow beam	Diffuse beam Long Range	Through beam emitter and receiver
Operating Distance	0.05...7 m on R5	2...250 mm (White 90%)	2...1000 mm (White 90%)	0...20 m
Emission	red LED (635 nm) EC62471 EXEMPT RISK GROUP (RG0)			red LED (635 nm)
Switching Frequency	1 kHz			500 Hz
Response Time	500 µs			1 ms
Supply Voltage	10-30 VDC			
Ripple	≤ 10% peak to peak max.			
No load Current	35 mA max.			
Voltage Leakage	≤ 2 V			
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled			
Load Current	100 mA Max, short circuit protected			
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)			
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models)			
Short Circuit Protection	•			
Reverse Polarity Protection	•			
Overvoltage Protection	•			
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing			
Ground resistivity	500 Vac 1 min., between electronics and housing			
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)			
Dimensions	11 x 32 x 20 mm			
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE			Body: technopolymer Fiber Glass reinforced; indicators: TPE
Actuators Material	POM, PMMA			
Plug Material	Nickel plated brass			
Optical Window Material	PMMA			
Mechanical Protection	IP67			
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements			
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)			
Ambient Light Immunity	according to EN 60947-5-2 : 2020			
Operating Temperature	-25 ... +55 °C			
Storage Temperature	-40°C...+70°C			

	S3N-PR-*-M01-**	S3N-PR-*-M03-OZ	S3N-PH-*-B01-**	S3N-PH-5-B03-OZ
				
				
	Background suppression		Polarized retroreflective	
Optical Function	Background suppression		Polarized retroreflective	
Operating Distance	3...350 mm - 0...800 mm (White 90%) <sup>(1)</sup>	18...180 mm (Black 6%)	0.1...12 m on R7	
Emission	red LED (635 nm)		Laser light 650 nm (red), Class 1 IEC60825-1 Ed. 3 2014	
Switching Frequency	500 Hz		2 kHz	
Response Time	1 ms		250 μs	
Supply Voltage	10-30 VDC			
Ripple	≤ 10% peak to peak max.			
No load Current	35 mA max.			
Voltage Leakage	≤ 2 V			
Current Leakage	≤ 300 μA static output; ≤ 400 μA for -03 (IO-Link) models with Push pull enabled			
Load Current	100 mA Max, short circuit protected			
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)			
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models))			
Short Circuit Protection	•			
Reverse Polarity Protection	•			
Overvoltage Protection	•			
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing			
Ground resistivity	500 Vac 1 min., between electronics and housing			
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)			
Dimensions	11 x 32 x 20 mm			
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE			
Actuators Material	POM, PMMA		Trimmers POM	Push button POM
Plug Material	Nickel plated brass			
Optical Window Material	PMMA			
Mechanical Protection	IP67			
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements			
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)			
Ambient Light Immunity	according to EN 60947-5-2 : 2020			
Operating Temperature	-25 ... +55 °C			
Storage Temperature	-40°C...+70°C			

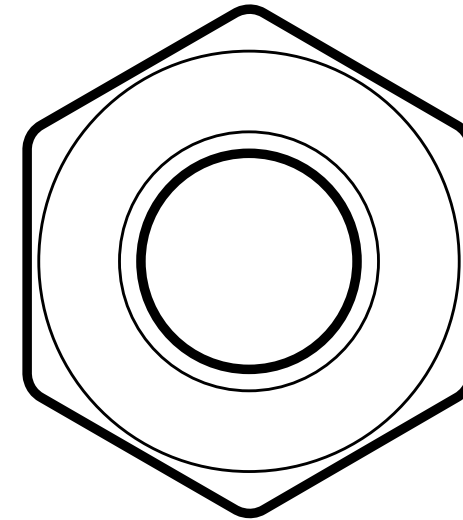
<sup>(1)</sup> on white object with 90% remission

	S3N-PH-*--M01-**	S3N-PH-5-M03-OZ	S3N-PH-*--FG0*--**	S3N-PR-*--T51-**	S3N-PR-*--T53-**	
						
						
Optical Function	Background suppression		Through beam emitter and receiver	Retroreflective for transparent		
Operating Distance	9...250 mm 0...600 mm (White 90%) <sup>(1)</sup>	22...130 mm (Black 6%)	0...30 mm	0...2000 mm on R7		
Emission	Laser light 650 nm (red), Class 1 IEC60825-1 Ed. 3 2014			Red LED 635 nm		
Switching Frequency	2 kHz	1.5 kHz	2 kHz	1 kHz	500 Hz	
Response Time	250 µs	333 µs	250 µs	0,5 ms	1 s	
Supply Voltage	10-30 VDC					
Ripple	≤ 10% peak to peak max.					
No load Current	35 mA max.					
Voltage Leakage	≤ 2 V					
Current Leakage	≤ 300 µA static output; ≤ 400 µA for -03 (IO-Link) models with Push pull enabled			≤ 300 µA static output	≤ 400 µA for T53 (IO-Link) models with Push pull enabled	
Load Current	100 mA Max, short circuit protected					
Output Type	PNP or NPN Discrete output all models - IO-Link + static configurable output (S3N...OZ models)					
Indicators	yellow OUTPUT LED - green Power ON LED (blue LED: IO-Link activity (S3N...OZ models) - LED green stability T51 models)					
Short Circuit Protection	•					
Reverse Polarity Protection	•					
Overvoltage Protection	•					
Insulation Resistance	>20 MΩ 500 Vdc, between electronics and housing					
Ground resistivity	500 Vac 1 min., between electronics and housing					
Shock and Vibration	0.5 mm amplitude - 10 ... 55 Hz frequency for every axis (EN60068-2-6)					
Dimensions	11 x 32 x 20 mm					
Housing Material	Body: technopolymer Fiber Glass reinforced; indicators: TPE					
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Plug Material	Nickel plated brass					
Optical Window Material	PMMA					
Mechanical Protection	IP67					
Electromagnetic Compatibility	according to EN 60947-5-2:2020 requirements					
Certifications	CE, UKCA, cULus (IO-Link: S3N...OZ models)					
Ambient Light Immunity	according to EN 60947-5-2 : 2020					
Operating Temperature	-25 ... +55 °C					
Storage Temperature	-40°C...+70°C					

<sup>(1)</sup> on white object with 90% remission

# S3N

## ACCESSORIES



Two different slit models, with rectangular or circular slot, can be easily mounted on the front side of the through beam sensors to reduce the emission beam. The resolution and the minimum object detectable can be improved with the slit positioned on the receiver (S3Z...F01).

The installation of the two aligned sensor couples is eased by mounting the slit also on the emitter (S3Z...G00), avoiding reciprocal interference.

The patented ST-S3Z-M18 accessory allows to adapt the miniature sensor S3Z to a M18 tubular mounting. It can be principally used with through beam and retroreflective models fixing the sensor in the proper holes as indicated on the housing.

The accessory affects the optic system narrowing the detection beam without changing the operating distance.



MODEL	DESCRIPTION	ORDER NR.
ST-5039	L-shaped mounting bracket	95ACC2270
ST-5040	protection bracket with vertical mounting (only for cable versions)	95ACC2280
ST-5046	protection bracket with horizontal mounting	95ACC2370
S3Z-SLIT1	Ø 0,5 mm slit for through beam	95ACC2470
S3Z-SLIT2	Ø 1 mm slit for through beam	95ACC2480
S3Z-SLIT3	Ø 2 mm slit for through beam	95ACC2490
S3Z-SLIT4	0,5x18 mm slit for through beam	95ACC2500
S3Z-SLIT5	1x18 mm slit for through beam	95ACC2510
S3Z-SLIT6	2x18 mm slit for through beam	95ACC2520
ST-S3Z-M18	S3Z FIX BRK M18 THREADED NOSE	95ACC7850

## **OUR EXPERTISE MAKES YOUR WORK EASIER**

Datasensing is merging Datalogic's Sensor & Safety and Machine Vision business unit with M.D. Micro Detectors, both with 50 years of experience and representing the history of sensors in Italy since the early '70s.

Our company is developing, manufacturing and supplying Machine Vision, Sensor and Safety, with more than 200 product lines, including 22500 standard and custom part numbers, protected by over 100 patents.

Our products are designed to inspect, detect and protect your production in better and easier way, with diffused applications in industrial automation of manufacturing and intralogistics processes.

Datasensing means high technology and innovative products... but it's the experience of our extraordinary people that makes the difference, from pre-sales to order processing and post-sales.

We have a global presence, with Headquarters in Italy and offices in Europe, China and US, together with a qualified network of distribution partners in all countries.

Datasensing not only focus on products, but also on Environmental, Social and Governance initiatives, as reducing the impact of products, production and logistics.

*Our Mission is to create added value through smart sensing solutions based on sustainable standard and custom products, developed with care and leading know how.*

*Our Vision is to be the top of mind partner to innovate sensing solutions for industrial automation.*







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