DATASENSING
easing automation challenges

NEW!

S3N
MINIATURE
PHOTOELECTRIC SENSOR

S3N
THE SENSOR YOU WERE SEARCHING FOR

- All models with visible and bright red emission
- LED and Laser Class1 models
- Multiple Background suppression functions
- Shiny and clear object detection
- Single, one or two trimmers, 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
- RGB contrast sensor > 30 kHz and jitter <8 us (preliminary)
- Connection with 2 m Cable or M8 connector
- Rugged IP67 Plastic global standard miniature case
- M3 threaded holes on the front side with metal inserts
- State of the art IO-Link connectivity with extended Smart Tasks

CE   UKCA   c(UL)us   IO-Link

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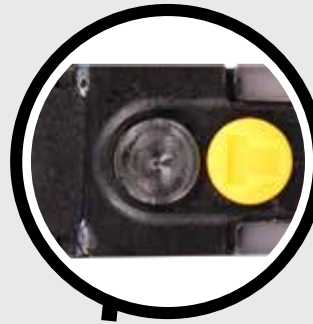
Furthermore, all models are available with Teach-in push button and smart IO-Link, offering advanced parametrization and monitoring functionalities, with predictive maintenance for your automation system.

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 can be easy configured and adjusted by basic trimmer interface or by Push-Button enabling advanced features and granting an extreme ease of use

S3N series has a wide range of light emission types with bright and shaped RED or RGB LED, precise point shaped Red LASER class 1 and Red LED narrow beam spot

The S3N rugged mechanic construction allows product installation in presence of severe mechanical stress without loosing detection performances

S3N series has a wide availability of optical functions and thanks to its innovative otpical design can fulfil the most typical industrial applications

S3N series provides a complete connectivity with M8 connector and 2 m cable output allowing sensor mounting even in reduced spaces. Pig-tail connectivity with M8 or M12 are available under request
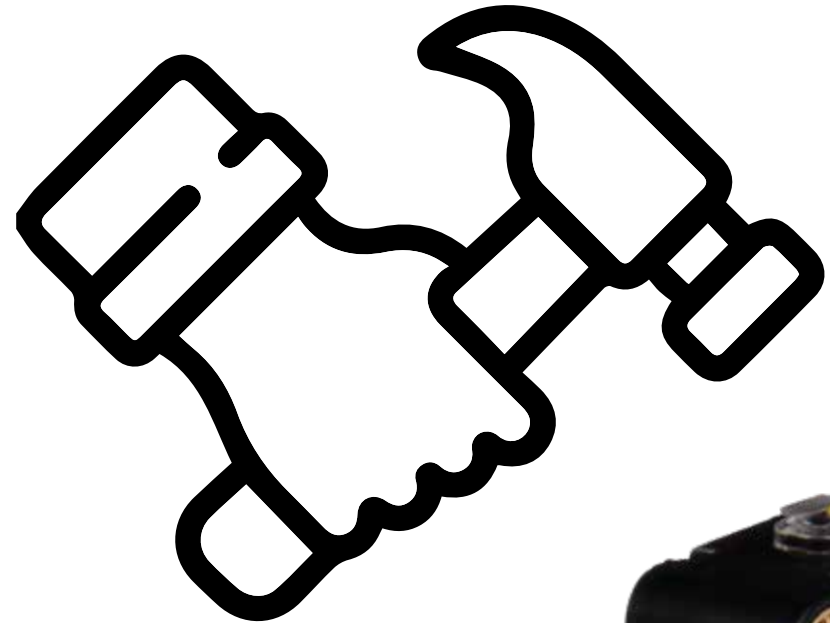
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MECHANICAL ROUGHNESS

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 glass fibers to reach maximum strength in a very compact size.

The threaded metal inserts are granting a very stable mechanic mounting in any condition.
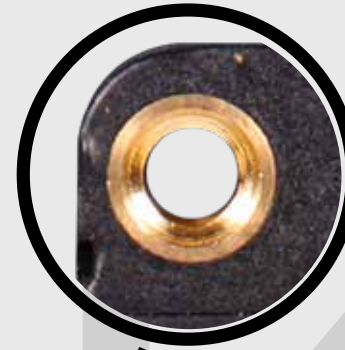
The user interface of the product combines easy access and rugged mechanics to ensure a safe and easy sensor set-up.

The metal M8-4 pins connector ensure fast and tight product connection, in cable models the cable output is designed to allow mounting in narrow space.

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

The mechanical inserts are threaded and designed to allow a stable and easy mounting
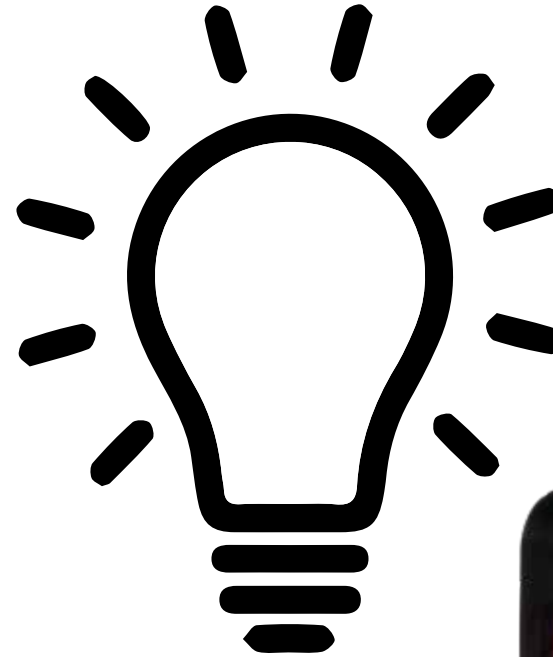
The M8 connector is full metal jacket to ensure the maximum connection strength, the cable connectivity is also available with 45° cable output to allow closer surface mounting

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

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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 proven tactile feeling for a fast and stable sensor adjustment. The sensor signalizations are visible up 360° with bright and high light intensity to ease the sensor alignment in any critical application condition. Red visible Light emission models are available to ease the installation process as well as Lasaer class 1 emission models to perform long range, precise and fast installations. Thanks to the DATASENSING ASIC proprietary technology the S3N series has a safe laser emission according to current laser safety standards. The embedded IO-Link technology is a great value for the customer to perform advanced monitoring and predictive maintenance.
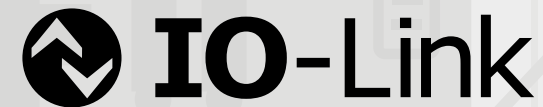
New ASIC

IO-Link

S3N has a wide variety of sensor setting taylored on customer application needs. The push button models have a proven 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 IO-Link push button models are provided of an additional Blue signalization LED to ease the installation with IO-Link connectivity

IO-Link

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

S3N has a wide range of light emissions with Red LED brigth spot precise and shaped red laser class 1 emission to ease the alignment on target

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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 background suppressor models to adapt the sensor in challenging applicationswith different colored conveyor belts or in presence of dirty substances on belt surface that could affect the target detection. 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

VIALS DETECTION

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

REGISTRATION MARK DETECTION

Mark detetection is used for cut and seal applications at very high speed with high grade of precison with mark reader model
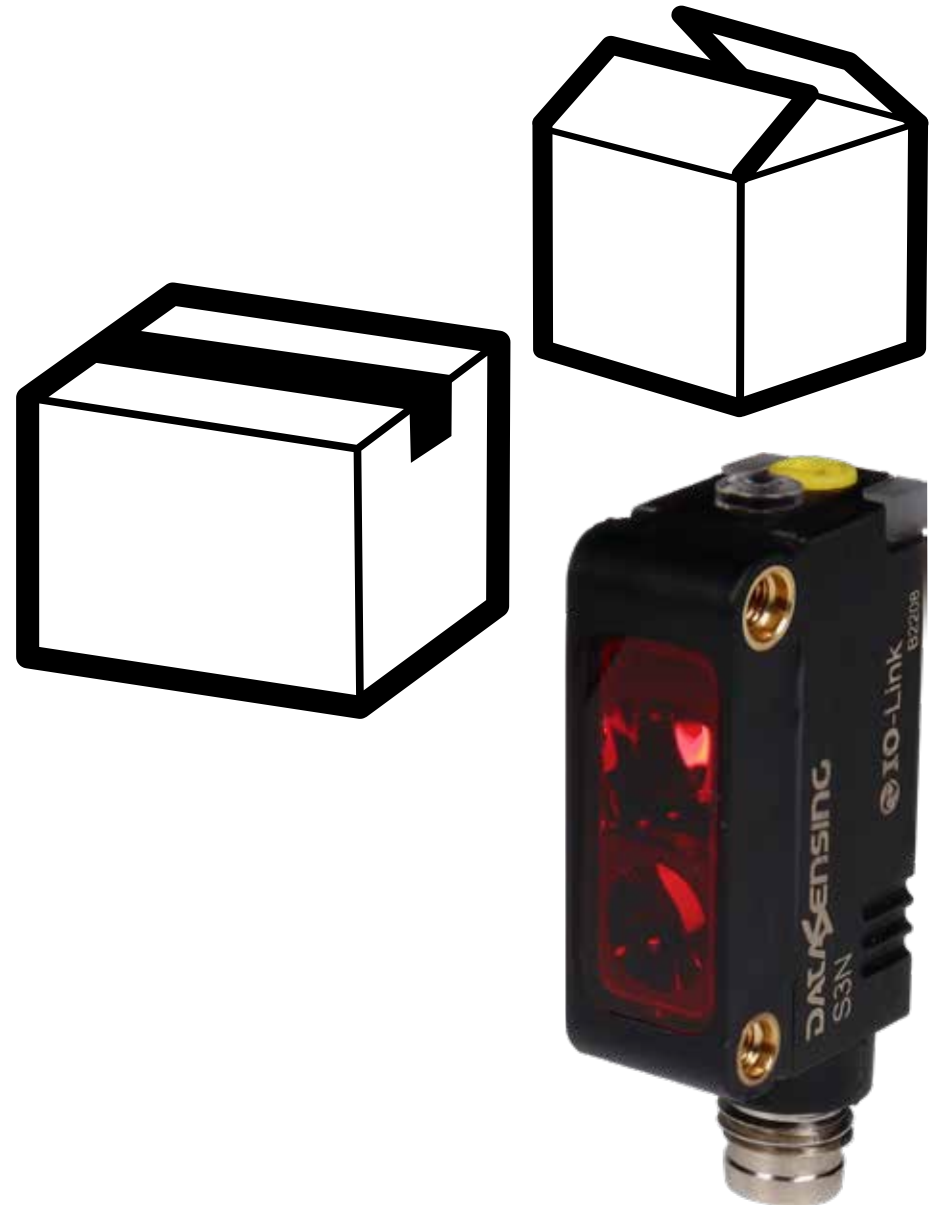
![Datasensing logo]

S3N

SECONDARY PACKAGING APPLICATION

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

The TEACH-IN models can be successfully used when shiny or reflective boxes surfaces 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

DETECTING BOXES ON CONVEYOR

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

CARDBOARD POSITION

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

WRAPPING PALLETS

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

CARDBOARD STOCK DETECTION

Detecting stocked cardboard gets easy with S3N retroreflex and background suppressor Red laser emission

DETECTION FOR ROBOTIC PLIERS

Robotic grippers will work fast and precise with S3N background suppressor LED and Laser emission models, reliably detecting any object type and LED

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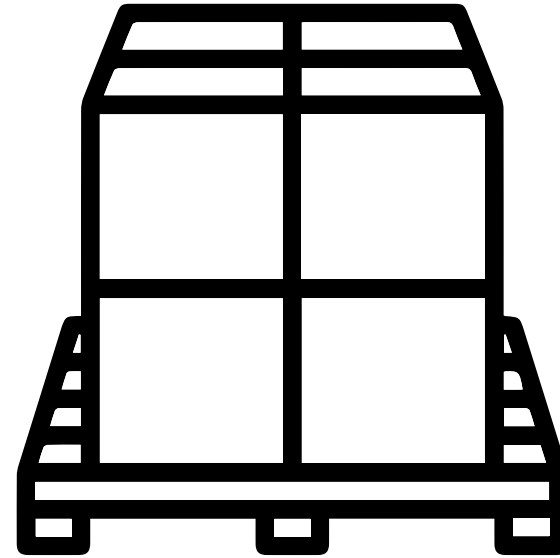easing automation challenges

S3N
INTRALOGISTICS APPLICATION

S3N is a great solution also for intralogistic applications thanks to wide range 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 in this application field.

Usually, the intralogistics plants have usually a very extended area.

S3N with its IO-Link parametrization and smart task can support the customer during installation and commissioning increasing the productivity thanks to 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 detected for presence or to complete safety applicazions S3N diffused and retroreflex models are the right and cost effective solution
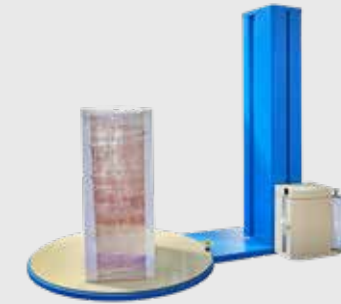

EXTENDED CONVEYOR SYSTEMS

Easing installation of large conveyor. Increasing productivity with monitoring and predictive maintenance tanks to S3N IO-Link communication.

WRAPPING PALLETS

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

CONVEYOR SORTER APPLICATIONS

Intralogistic sorters are usually very large installations for postal and currier 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 monitoring enabling easy remote control

INTRALOGISTIC SHUTTLE APPLICATIONS

Shuttles handling and controlling is very important in logistic market segment. S3N can be a good solution companion for collision avoidance applications thanks to background suppressors models
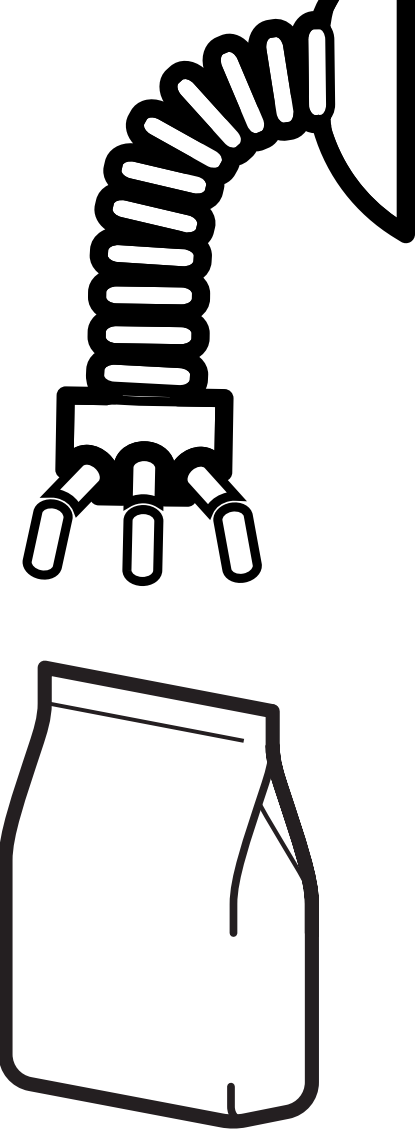

VERTICAL STORAGE APPLICATIONS

S3N is a perfect solution for vertical storage applications with its compact dimension and high performance background suppressor models detecting different colored materials and metal surface targets

S3N

MANUFACTURING APPLICATION

S3N is a very good solution in manufacturing applications. It can easily detect transparent, shiny metal and films and small objects with its precise and safe laser emission then it can be easy adjusted through 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.

ELECTRONIC ASSEMBLE

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 emission 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 sensor with high integration capability are requested. The high electrical immunity and cross talk prevention with state of art detection performances are very important for an easy 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

Automotive industries applications where metal shiny parts have to be detected on assembly conveyor lines are usually challenging. 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 increasingly the demand about miniaturized sensors 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	LED polarized retroreflective	LED diffuse narrow beam	LED diffuse beam Long Range	LED through beam tx and rx
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 EXTEMPT 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-PR-*-T51-**	S3N-PR-*-T53-**	S3N-PR-5-W03-OZ
Optical Function	LED background suppression		LED Retroreflective for transparent		RGB LED contrast sensor
Operating Distance	25...300 mm (W/B <25%) 25...200 mm (Black 6%) 10...800 mm (White 90%) [1]	25...180 mm (Black 6%)	0...2000 mm on R7		12 ± 3 mm
Emission	red LED (635 nm)				LED: Red 633 nm, Green 525 nm, Blue 460 nm
Switching Frequency	500 Hz		1 kHz	500 Hz	30kHz/60kHz selectable
Response Time	1 ms		0,5 ms	1 ms	16 µs/8 us selectable jitter: 8 µs/4 µs selectable
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)				
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				
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				

[1] on white object with 90% remission

	S3N-PH-*-B01-**	S3N-PH-5-B03-OZ	S3N-PH-*-FG0*-**	S3N-PH-*-M01-**	S3N-PH-5-M03-OZ
Optical Function	Laser polarized retroreflective		Laser through beam tx and rx	Laser background suppression	
Operating Distance	0.1...12 m on R7		0...30 mm	30...200 mm (W/B <25%) 30...130 mm (Black 6%) 10...500 mm (White 90%) [1]	22...130 mm (Black 6%)
Emission	Laser light 650 nm (red), Class 1 IEC60825-1 Ed. 3 2014				
Switching Frequency	2 kHz				1.5 kHz
Response Time	250 µs				333 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) - 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				
Actuators Material	Trimmers POM	Push button POM		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				

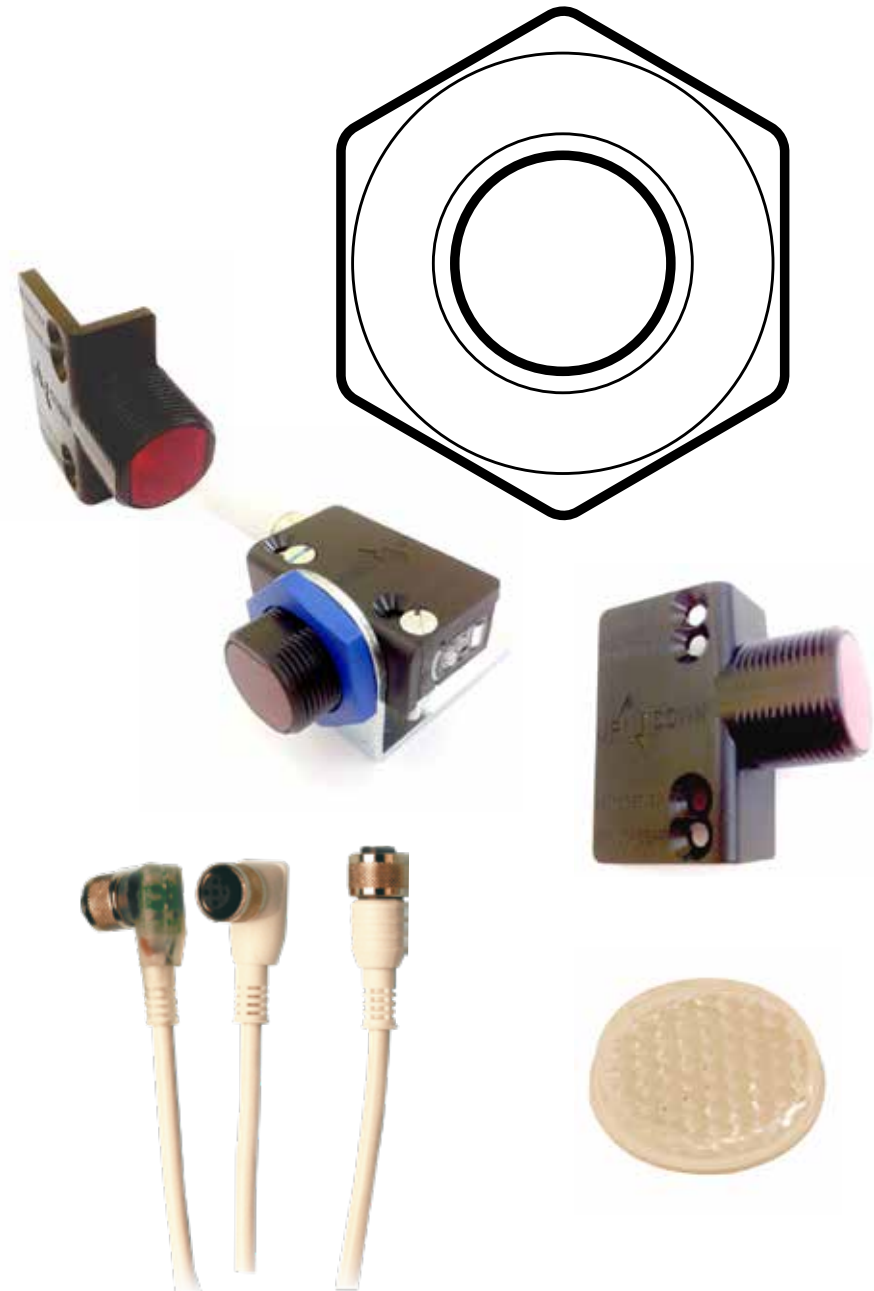[1] on white object with 90% remission

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.

BRACKETS

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

REFLECTORS

MODEL	DESCRIPTION	ORDER NR.
R7 Reflector	R7 REFLECTOR RRX LASER 51X61MM M505-12	95A151360
R4 Reflector	R4-PLASTIC REFLECTOR -51X61MM	95A151340

CABLES

MODEL	DESCRIPTION	ORDER NR.		
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650
Axial M12 F/M8 M Connector	4-pole, double headed	3 m	CS-H1-02-B-03	95ACC0008

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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