SVS2 SERIES

The **SVS2** vision sensor series presents all the characteristics able to solve artificial machine vision applications in a flexible and intuitive way. **SVS2** is a completely embedded device: the optic, the red LED illuminator and the electronics are included in an extremely compact housing. The sensor is configured via PC through Ethernet communication. The configuration software is included in the product and it has been developed in order to lead the customer through the configuration process step by step. **SVS2** is available in two different versions according to the installed control tools: **Object Recognition (OBJ)** and **Advanced Object Recognition (AOR)**. Many different control typologies are available: brightness, contrast, position, width, count, pattern match, contour match, 360° pattern match.

SVS2 Eagle

HIGHLIGHTS

- Flexible and intuitive setup via PC through Ethernet
- Memorisation of 20 inspections
- 8 different controls
- 360° pattern match for Advanced models
- Logical operators: AND, OR, NOT, NAND, NOR, etc.
- TURBO mode to double elaboration speed
- Advanced Ethernet: inspection results available on interface

APPLICATIONS

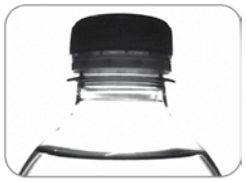
SVS2 is ideal for the control of text presence in overprinting and logo position on food packages, product completeness before packaging, logo position on cosmetic bottles, correct stamp on post envelopes, liquid level inside a plastic bottle, correct product orientation on a conveyor belt.

Stamp control

Part orientation

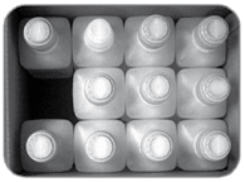
Overprinting

Level control



Logo control

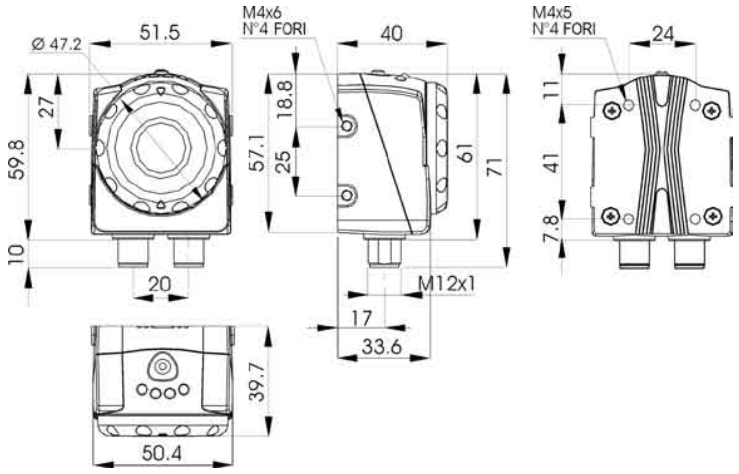
Object counting



The extremely compact size of the SVS sensors is not an obstacle for the full integration of al the elements for a reliable image-based control.

- Compact housing
- Red light LED illuminator
- Selectable lenses
- Focus knob
- Standard M12 connectors
- Ethernet communication
- 3 PNP outputs
- 4 signalling LEDs: output1, output2, power supply, communication
- Teach push-button
- 640x480 pixel greyscale image sensor

DIMENSIONS



INDICATORS AND SETTINGS

Teach push-button with double function:

- reference image update
- recovery mode

A Power supply, green

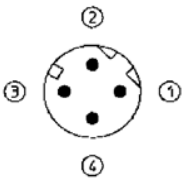
B Digital output 1, orange

C Digital output 2, orange

D Network connection, green

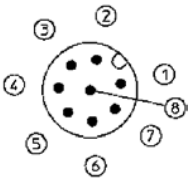
CONNECTIONS

M12 4-pole Ethernet



PIN 1 = white/orange = RX+
PIN 2 = white/green = TX+
PIN 3 = orange = RX-
PIN 4 = green = TX-

M12 8-pole (power supply and I/O)



PIN 1 = white = digital input 1
PIN 2 = brown = 24 Vdc
PIN 3 = green = STROBE for external illuminator
PIN 4 = yellow = output 1
PIN 5 = grey = output 2
PIN 6 = pink = output 3
PIN 7 = blue = GND
PIN 8 = red = external trigger

TECHNICAL DATA

Power supply:	24 Vcc ±10 %
Ripple:	1 Vpp max with illuminator 2 Vpp without illuminator
Consumption:	100 mA at 24 Vdc (without illuminator)
Output type:	3 PNP
Output current:	100 mA max
Saturation voltage:	< 2 V
Network interface:	M12 4-pole Ethernet 10/100 Mbs
External illuminator interface:	Strobe signal (TTL)
Frame rate:	60 fps
Optics:	integrated (6 mm / 8 mm / 12 mm / 16 mm)
Setting:	TEACH push-button
Indicators:	4 LED
Connections:	M12 8 pole A-code M12 4 pole D-code
Mechanical protection:	IP50
Protection devices:	A, B
Housing material:	aluminium alloy / ABS
Weight:	125 g
Operating temperature:	-10 ... +50°C
Storage temperature:	-25 ... +70°C

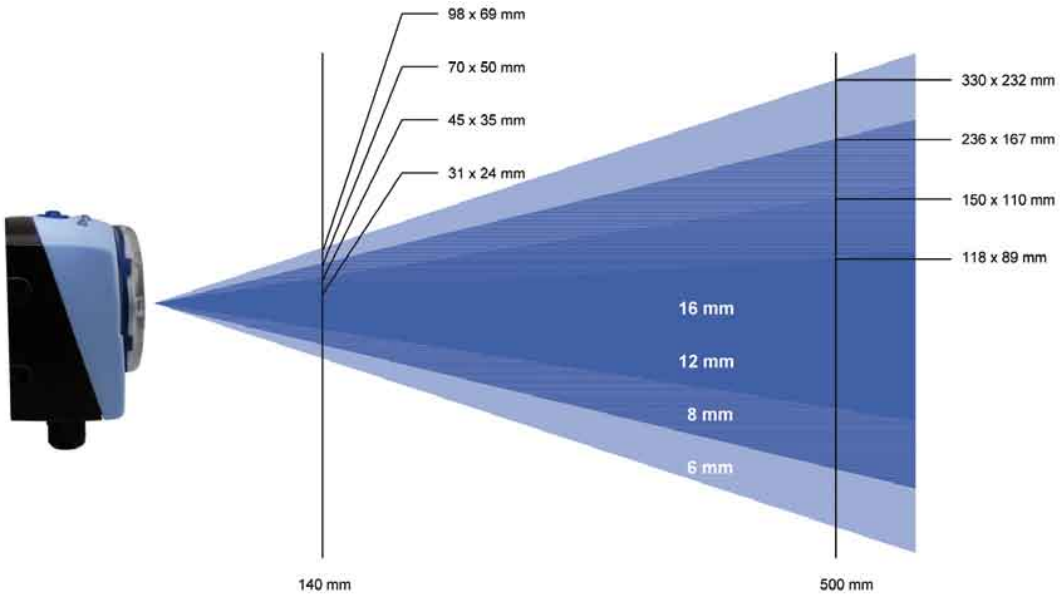
TECHNICAL NOTES

[1]Limit values
[2]A - reverse polarity protection
B - overload and short-circuit protection

c UL US LISTED

FIELD OF VIEW

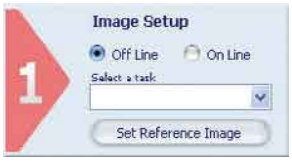
Operating distance (mm)	SVS2-12-DE-OBJ	SVS2-08-DE-OBJ	SVS2-06-DE-OBJ
50	17x12	25x20	42x30
80	25x20	40x30	60x41
110	33x25	55x40	80x55
140	45x35	70x50	98x69
170	53x38	85x65	118x83
200	60x50	100x70	138x92
300	90x65	145x103	201x140
400	121x82	186x132	265x189
500	150x110	236x167	330x232
600	185x130	282x232	385x270



SOFTWARE PC

The third step simulates sensor functioning on the PC to verify the controls chosen and activates the operating phase on the sensor using the PC only to control the diagnostics.

Passo 1: Image Setup

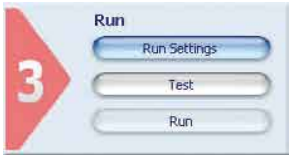


The first step consists in connecting the sensor and configurating the image quality parameters. When the desired results are obtained, the user can memorise the image that will be used as a template during sensor functioning.

Passo 2: Teach

The second step establishes the acceptance criteria to distinguish objects from wastes. One or more controls can be selected according to the task to carry-out.

Passo 3: Run



The third step configures the sensor digital outputs, simulates sensor functioning on the PC to verify the controls chosen and activates the operating phase on the sensor using the PC only to control the diagnostics.

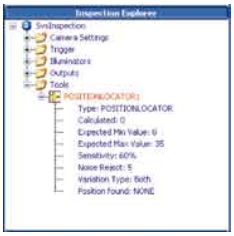
MAXIMUM SIMPLICITY

Discovery

The Discovery function finds all the sensors connected to the network.

Help

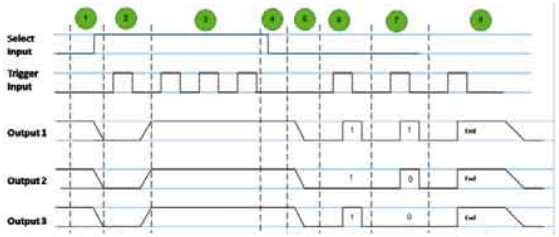
A Help is available for each step, supplying useful suggestions on the options available.



Inspection explorer

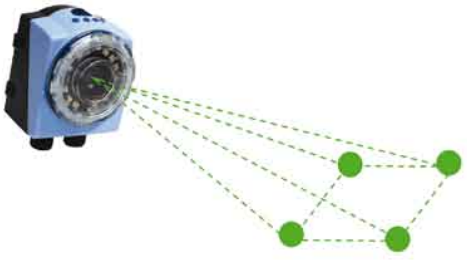
All the parameters connected to the inspection are grouped together and can be easily reached by the user.

Inspection selection



Each inspection is composed of a template and parameters. A specific inspection can be thus referred to different products in progress on the same production line.
The different inspections can be recalled using digital pulses or through an Ethernet command, only in the advanced models. Different inspection selection protocols with or without acknowledge are available.

LED pointer

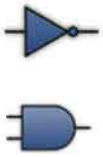


Four green light LEDs emit four light spots able to delimit the sensor's inspection field. In this manner, the user will constantly have a precise idea of the image that will be acquired by the sensor, easing installation.

ADVANCED FUNCTIONALITIES

The Advanced Object Recognition (AOR) models integrate new important functionalities, including:

360° Pattern Match locator
Object detection independent from rototranslations.



Logical tools
Possibility to combine the results of the single tools through boolean operator (AND, OR, NOT, etc.)

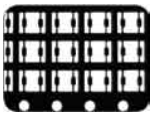
Advanced Ethernet
Current inspection results available also on Ethernet communication.

Speed-up
High execution speed thanks to the management of reduced resolution and TURBO mode.

CONTROL TABLE

Object Recognition

Seven different controls able to cover the most varied applications.

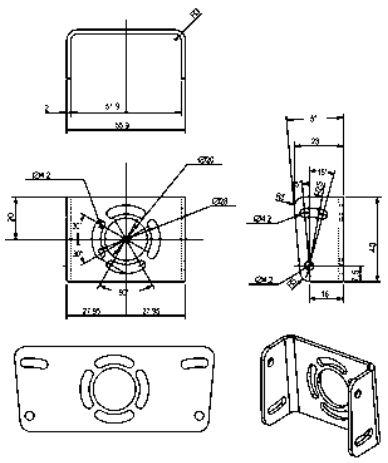
Control	Functioning	Applications	Image
Pattern Match	Searches a sample inside a specific area	• Packaging: logo check • Assembling: product orientation • Post automation: stamp check	
Contour Match	Shape control	• Metal working: integrity control • Food: coffee waffle shape control	
Position	Check of object border position	• Bottling: liquid level control: • Food: label position control	
Width	Measures object width	• Assembling: plastic part control • Wood industry: branch thickness	
Counting	Counts the objects along a line	• Electronics: component counting • Pharmaceutical: blister stack counting	
Contrast	Contrast calculation	• Food: date and lot presence control • Metal working: laser marking control	
Brightness	Brightness calculation	• Bottling: cap presence control • Packaging: object counting	

Advanced Object Recognition

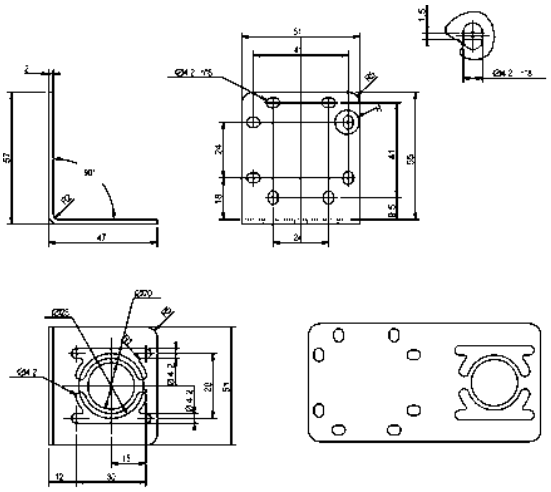
The Advanced Object Recognition (AOR) models include all the controls and locators available on Object Recognition models as well as the new 360° Geometric Pattern Match Locator.

ACCESSORIES

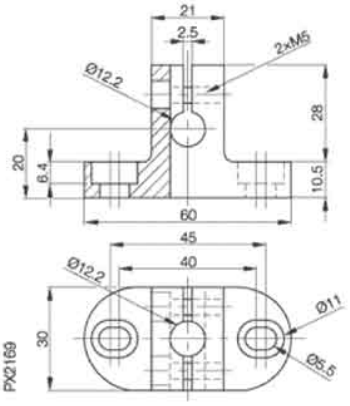
ST-5066
U-shaped fixing bracket for angle adjustment

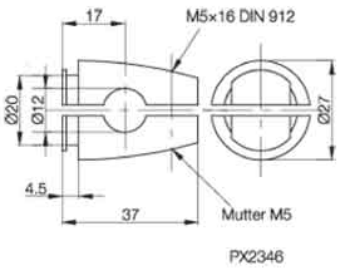


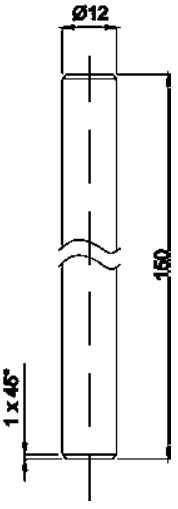
ST-5068
L-shaped fixing bracket for 90° mounting



Mounting kit







MODEL SELECTION TABLE

MODEL	SOFTWARE	LOGICAL TOOLS	ETHERNET	I/O	OPTIC	ORDER N°
SVS2-06-DE-OBJ	Object Rec.		Base	1IN; 3 OUT	6mm	959951050
SVS2-08-DE-OBJ	Object Rec.		Base	1IN; 3 OUT	8mm	959951060
SVS2-12-DE-OBJ	Object Rec.		Base	1IN; 3 OUT	12mm	959951070
SVS2-16-DE-OBJ	Object Rec.		Base	1IN; 3 OUT	16mm	959951030
SVS2-06-DE-AOR	Adv. Obj. Rec.	•	Avanzata	1IN; 3 OUT	6mm	959951000
SVS2-08-DE-AOR	Adv. Obj. Rec.	•	Avanzata	1IN; 3 OUT	8mm	959951010
SVS2-12-DE-AOR	Adv. Obj. Rec.	•	Avanzata	1IN; 3 OUT	12mm	959951020
SVS2-16-DE-AOR	Adv. Obj. Rec.	•	Avanzata	1IN; 3 OUT	16mm	959951040

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CS-A1-06-B-03	M12 8-pole connector with 3 m unshielded cable	95ACC2230
CS-A1-06-B-05	M12 8-pole connector with 5 m unshielded cable	95ACC2240
CS-A1-06-B-10	M12 8-pole connector with 10 m unshielded cable	95ACC2250
SVS-ST-5068	L-shaped fixing bracket for 90° mounting	95A901320
SVS-ST-5066	U-shaped fixing bracket for angle adjustment	95A901330
SVS-CV-RJ45C-03	3 m crossed Ethernet cable	95A901340
SVS-CV-RJ45D-03	3 m direct Ethernet cable	95A901350
SVS-MK-01	Mounting kit	95A901380

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