VISOR® Color

Vision sensor for the most precise object detection





The same or not the same?

The VISOR® Color detects even the smallest of colour nuances more reliably than the human eye. This allows, for example, the detection of colour deviations or the sorting of parts by colour.



Incorrect occupancy ruled out:

The VISOR® Color combines colour and object detection in a single device and can therefore simultaneously inspect occupancy of the blister for completeness and for occupancy with the correct colour.

HIGHLIGHTS OF THE VISOR® COLOR

- Improved object detection through additional colour information
- Powerful colour detection, even with the smallest of colour nuances or self-illuminating components
- · Powerful part finding and tracking
- Highly accurate evaluation via 1.3 megapixel colour chip
- Up to 6 digital switching outputs (another 32 with IO box)
- User-friendly configuration and viewer software with graded user rights and online help



All LEDs in the right place?

A unique performance feature of vision colour sensors is the detection of active (self-illuminating) colours. For example, displays in the automotive industry or electronic components can be inspected for correct placement with the VISOR®



Colour is an important feature for detecting and differentiating between objects during the production process. Whether coloured marks in quality assurance, coloured printing or labels, LEDs or display elements, the occupancy of cable harnesses, or the browning level of baked goods – industry is much more colourful than is generally assumed.

Classic colour sensors are limited to the detection of passive colours, i.e. of object colours or coloured marks – they have to give up when confronted with self-illuminating objects. The VISOR® Color vision colour sensor from SensoPart knows no such restrictions – it not only "sees" objects of any shape and colour, but also provides additional information on colour intensity and the position of the particular object. It can also represent an alternative to conventional contrast sensors for

determining grey values and contrast differences when other object features are to be evaluated simultaneously.

The upgrade to colour is easy

The new generation of VISOR® Color vision colour sensors not only supports colour detection but also all the performance features of the VISOR® object sensor. The operating concept of the two vision sensors is identical – there are just three additional detectors for colour detection with corresponding configuration possibilities. The introductory effort for those switching from the VISOR® object sensor is thus minimal – when will you put more colours into your applications?

VISOR® Color – product overview					
	Product variant	Resolution	Focal length	Integrated illumination	Page
V20C-CO-A2-xx	Advanced	1280 x 1024 pixels	12 mm	White	82
V20C-CO-A2-xx	Advanced	1280 x 1024 pixels	C-mount	None	84
V10C-CO-S2-xx	Standard	736 × 480 pixels	6 mm	White	86
V10C-CO-S2-xx	Standard	736 × 480 pixels	12 mm	White	88
V10C-CO-A2-xx	Advanced	736 x 480 pixels	6 mm	White	90
V10C-CO-A2-xx	Advanced	736 × 480 pixels	12 mm	White	92
V10C-CO-A2-xx	Advanced	736 x 480 pixels	25 mm	White	94
V10C-CO-A2-xx	Advanced	736 x 480 pixels	C-mount	None	96

Advanced vision sensor for object detection, colour, 12 mm











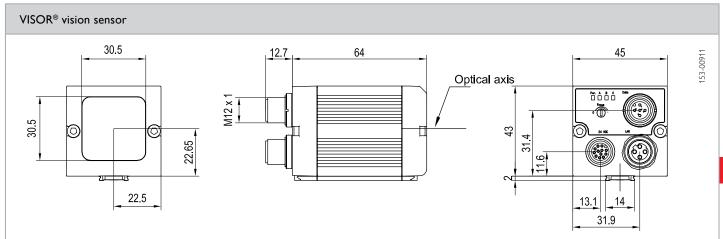
- Object detection in colour with 1.3 mega pixel resolution
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

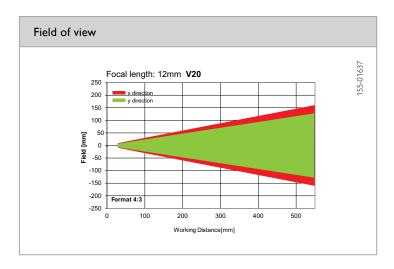
Optical data		Functions		
Resolution	1280 x 1024 pixels	Number of jobs / detectors	max, 255 / max, 255	
CMOS	1/1.8", colour	Detectors	Contour, pattern comparison, calliper,	
Integrated lens, focal length	12 mm, adjustable focal position		BLOB, contrast, brightness, grey level,	
Adjustment range	30 mm to infinity		colour value, colour area, colour list	
Integrated illumination	White LEDs	Properties	Position tracking: X/Y and orientation:	
Minimum field of view, X x Y	16 x 13 mm ²	Turind and disease?	pattern comparison / contour: teach- and detection of patterns and con- tours; calliper: distance between edge BLOB; grey threshold, brightness: eva- luation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection wi adustable tolerance; colour list: finding the most similar colours Typ. 30 ms pattern comparison; typ. 60 m	
		Typical cycle times ²	contour; Typ. 12 ms calliper; typ. 50 ms BLOB; typ. 2 ms brightness; typ. 2 ms cotrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. ms colour list	
Electrical data		Mechanical data		
Operating voltage, +U _B	18 26.4V DC¹	Dimensions	65 × 45 × 45 mm³ (without plug)	
Current consumption	≤ 120 mA	Enclosure rating	IP 67	
(without illumination and I/O)		Material, housing	Aluminium, plastic	
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic	
Protective circuits	Reverse-polarity protection, U _B /	Ambient temperature: operation	0 +50° C³	
Power On Delay	short-circuit protection of all outputs Approx. 13 s after Power on	Ambient temperature: storage	-20 +60° C³	
	**	Weight	Approx. 160 g	
Outputs Max. output current (per output)	PNP / NPN (switchable) 50 mA, 100 mA (pin 12)	Plug connections	Supply and I/O M12, 12-pin	
Inputs	PNP/NPN High > $U_B - 1$ V, Low < 3 V		Ethernet M12, 4-pin Data M12, 5-pin	
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2	
Encoder input	- 20 KONIN High > 4V	vioration and impact resistance	LIN 00777-3-2	
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET			
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs			

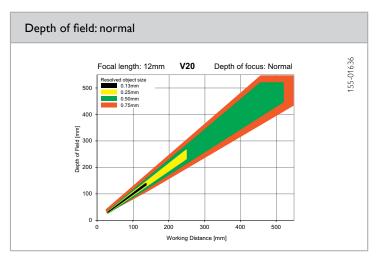
 $^{^{1}}$ Max. ripple < 5 V_{ss} 2 with VGA-resolution (640 x 480 pixels) 3 80 % air humidity, non-condensing

Illumination	Part number	Article number
White	V20C-CO-A2-W12	536-91020









Accessories			
Connection cables	From Page A-34		
Illumination	From Page A-27		
Brackets	From Page A-4		
Interface accessories	From Page A-38		

Advanced vision sensor for object detection, colour, C-mount











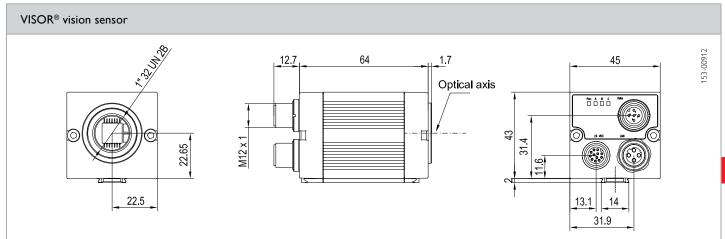
- Object detection in colour with 1.3 megapixel resolution
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

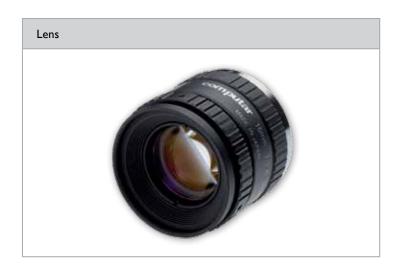
Optical data		Functions		
Resolution	1280 x 1024 pixels	Number of jobs / detectors	max. 255 / max. 255	
CMOS	1/1.8", colour	Detectors	Contour, pattern comparison, calliper,	
Integrated lens, focal length	C-Mount		BLOB, contrast, brightness, grey level,	
Adjustment range	Dependent on lens		colour value, colour area, colour list	
Integrated illumination	None	Properties	Position tracking: X/Y and orientation;	
Minimum field of view, X x Y	Dependent on lens		pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightnes evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection wi adustable tolerance; colour list: finding the most similar colours	
		Typical cycle times ²	Typ. 30 ms pattern comparison; typ. 60 n contour; Typ. 12 ms calliper; typ. 50 ms BLOB; typ. 2 ms brightness; typ. 2 ms colour trast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. ms colour list	
Electrical data		Mechanical data		
Operating voltage, +U _B	18 26.4V DC ¹	Dimensions	65 x 45 x 45 mm³ (without plug)	
Current consumption	≤ 120 mA	Enclosure rating	IP 65 ³	
(without illumination and I/O)		Material, housing	Aluminium, plastic	
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic	
Protective circuits	Reverse-polarity protection, U _B /	Ambient temperature: operation	0 +50 °C ⁴	
	short-circuit protection of all outputs	Ambient temperature: storage	-20 +60 °C ⁴	
Power On Delay	Approx. 13 s after Power on	Weight	Арргох. 160 g	
Outputs	PNP / NPN (switchable)	Plug connections	Supply and I/O M12, 12-pin	
Max. output current (per output)	50 mA, 100 mA (pin 12)		Ethernet M12, 4-pin	
Inputs	$\frac{\text{PNP/NPN High} > \text{U}_{\text{B}}\text{-1 V, Low} < 3 \text{ V}}{\text{> 20 kOhm}}$	Vilentia and income and and	Data M12, 5-pin FN 60947-5-2	
Input resistance		Vibration and impact resistance	EIN 60947-3-2	
Encoder input Interfaces	High > 4V Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET			
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs			

¹ Max. ripple < 5 V_{cc} ²With VGA-resolution (640 × 480 Pixel) ³With LPT45 C-mount protective casing ⁴ 80 % air humidity, non-condensing

Part number	Article number
V20C-CO-A2-C	536-91021







	LO C 8	LO C 12	LO C 16	LO C 25	LO C 35	LO C 50	LO C 75
Focal length Article number	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
	526-51513	526-51514	526-51515	526-51516	526-51525	526-51113	526-51116

Accessories		
Connection cables	From Page A-34	
Illumination	From Page A-27	
Lenses	From Page A-25	
Brackets	From Page A-4	
Interface accessories	From Page A-38	

Standard vision sensor for object detection, colour, 6 mm











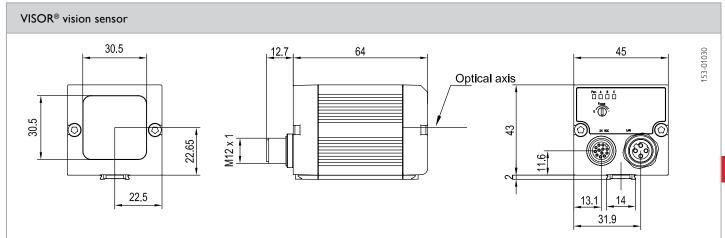
- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights

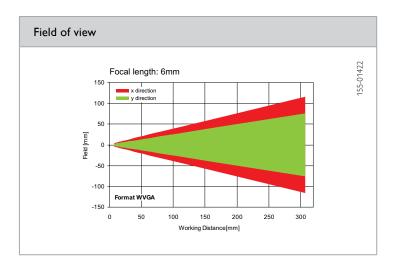
Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	8 / 32
CMOS	1/3", colour	Detectors	Position tracking X/Y and orientation
Integrated lens, focal length	6 mm, adjustable focal position		via contour inspection; colour area
Adjustment range	6 mm to infinity	Properties	Position tracking X/Y and orientation
Integrated illumination	White LEDs		contour: teach-in and detection of contours: colour area: two-dimension
Minimum field of view, X x Y	5 x 4 mm ²		contours; colour area: two-dimension colour inspection with adustable tole rance
		Typical cycle times	Typ. 60 ms position tracking Typ. 30 ms colour area
Electrical data		Mechanical data	
Operating voltage, +U _B	18 26.4 V DC ¹	Dimensions	$65 \times 45 \times 45 \text{ mm}^3$ (without plug)
Current consumption	≤ 120 mA	Enclosure rating	IP 67
			All the last
(without illumination and I/O)		Material, housing	Aluminium, plastic
(without illumination and I/O) Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic
(without illumination and I/O)	Reverse-polarity protection, U _B /		Plastic 0 +50 °C²
(without illumination and I/O) Current consumption (without I/O) Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
(without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay	Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on	Material, front screen Ambient temperature: operation Ambient temperature: storage Weight	Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g
(without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs	Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable)	Material, front screen Ambient temperature: operation Ambient temperature: storage	Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin
(without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output)	Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12)	Material, front screen Ambient temperature: operation Ambient temperature: storage Weight Plug connections	Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin
(without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output) Inputs	Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12) PNP/NPN High > U _B -1 V, Low < 3 V	Material, front screen Ambient temperature: operation Ambient temperature: storage Weight	Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin
(without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output)	Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12)	Material, front screen Ambient temperature: operation Ambient temperature: storage Weight Plug connections	Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin

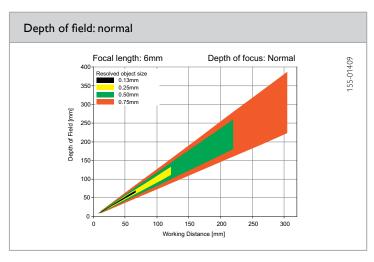
 $^{^{1}}$ Max, ripple $< 5 \, V_{ss}$ 2 80 % air humidity, non-condensing

Illumination	Depth of field	Part number	Article number
White	Normal	V10C-CO-S2-W6	535-91071









Accessories		
Connection cables	From Page A-34	
Illumination	From Page A-27	
Brackets	From Page A-4	
Interface accessories	From Page A-38	

Standard vision sensor for object detection, colour, 12 mm











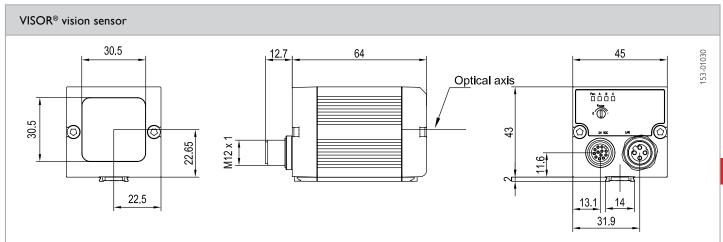
- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights

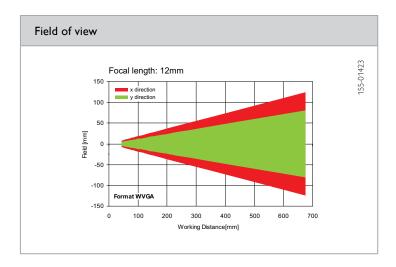
Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	8 / 32
CMOS	1/3", colour	Detectors	Position tracking X/Y and orientation
Integrated lens, focal length	12 mm, adjustable focal position		via contour inspection; colour area
Adjustment range	30 mm to infinity	Properties	Position tracking X/Y and orientation
Integrated illumination	White LEDs		contour: teach-in and detection of
Minimum field of view, X x Y	8 × 6 mm ²		contours; colour area: two-dimensior colour inspection with adustable tolerance
		Typical cycle times	Typ. 60 ms position tracking Typ. 30 ms colour area
Electrical data		Mechanical data	
Operating voltage, +U _B	18 26.4V DC ¹	Dimensions	$65 \times 45 \times 45 \text{ mm}^3$ (without plug)
Current consumption	≤ 120 mA	Enclosure rating	IP 67
(without illumination and I/O)		Material, housing	Aluminium, plastic
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Ambient temperature: operation	0 +50 °C²
Power On Delay	Approx. 13 s after Power on	Ambient temperature: storage	-20 +60 °C²
Outputs	PNP / NPN (switchable)	Weight	Approx. 160 g
Max. output current (per output)	50 mA, 100 mA (pin 12)	Plug connections	Supply and I/O M12, 12-pin
Inputs	PNP/NPN High $> U_{\rm p}-1$ V, Low < 3 V	Vibration and impact resistance	Ethernet M12, 4-pin FN 60947-5-2
Input resistance	> 20 kOhm	vibration and impact resistance	EIN 60747-3-2
IIIDUL PESISLATICE	Ethernet (LAN), EtherNet/IP,		
Interfaces	PROFINET		

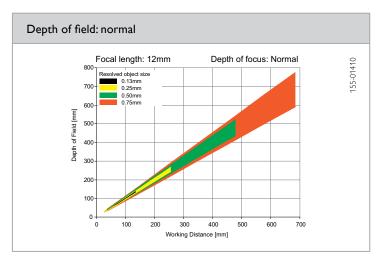
 $^{^{1}}$ Max, ripple $< 5 \, V_{ss}$ 2 80 % air humidity, non-condensing

Illumination	Depth of field	Part number	Article number
White	Normal	V10C-CO-S2-W12	535-91072









Accessories		
Connection cables	From Page A-34	
Illumination	From Page A-27	
Brackets	From Page A-4	
Interface accessories	From Page A-38	

Advanced vision sensor for object detection, colour, 6 mm











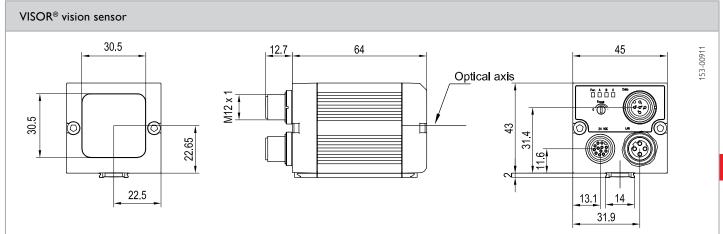
- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

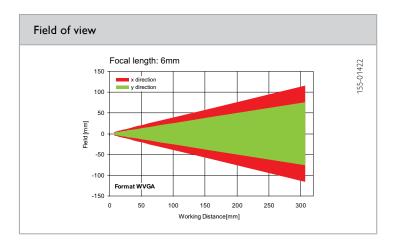
Optical data		Functions	
Resolution	736 × 480 pixels	Number of jobs / detectors	max, 255 / max, 255
CMOS	1/3", colour	Detectors	Contour, pattern comparison, calliper,
Integrated lens, focal length	6 mm, adjustable focal position		BLOB, contrast, brightness, grey level,
Adjustment range	6 mm to infinity		colour value, colour area, colour list
Integrated illumination	White LEDs	Properties	Position tracking: X/Y and orientation;
Minimum field of view, X xY	5 x 4 mm ²		pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness evaluation of brightness; contrast: evalua tion of contrast; colour area: two-dimer sional colour inspection with adustabl tolerance; colour list: finding the most similar colours
		Typical cycle times	Typ. 30 ms pattern comparison; typ. 60 ms contour; Typ. 12 ms calliper; typ. 50 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list
Electrical data		Mechanical data	·
Liecti icai data			
	18 26.4V DC ¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Operating voltage, +U _B Current consumption	18 26.4 V DC¹ ≤ 120 mA	Dimensions Enclosure rating	65 × 45 × 45 mm³ (without plug) IP 67
Operating voltage, +U _B			· · · · · · · · · · · · · · · · · · ·
Operating voltage, +U _B Current consumption		Enclosure rating	IP 67
Operating voltage, +U _B Current consumption (without illumination and I/O)	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B /	Enclosure rating Material, housing	IP 67 Aluminium, plastic
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs	Enclosure rating Material, housing Material, front screen	IP 67 Aluminium, plastic Plastic
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on	Enclosure rating Material, housing Material, front screen Ambient temperature: operation	IP 67 Aluminium, plastic Plastic 0 +50 °C²
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable)	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C²
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output)	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12)	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage Weight	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output) Inputs	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12) PNP/NPN High > U _B -1 V, Low < 3 V	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage Weight Plug connections	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output) Inputs Input resistance	≤ 120 mA Severse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12) PNP/NPN High > U _B -1 V, Low < 3 V > 20 kOhm	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage Weight	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output) Inputs Input resistance Encoder input	≤ 120 mA ≤ 200 mA Reverse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12) PNP/NPN High > U _B -1 V, Low < 3 V	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage Weight Plug connections	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Operating voltage, +U _B Current consumption (without illumination and I/O) Current consumption (without I/O) Protective circuits Power On Delay Outputs Max. output current (per output) Inputs Input resistance	≤ 120 mA Severse-polarity protection, U _B / short-circuit protection of all outputs Approx. 13 s after Power on PNP / NPN (switchable) 50 mA, 100 mA (pin 12) PNP/NPN High > U _B -1 V, Low < 3 V > 20 kOhm	Enclosure rating Material, housing Material, front screen Ambient temperature: operation Ambient temperature: storage Weight Plug connections	IP 67 Aluminium, plastic Plastic 0 +50 °C² -20 +60 °C² Approx. 160 g Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin

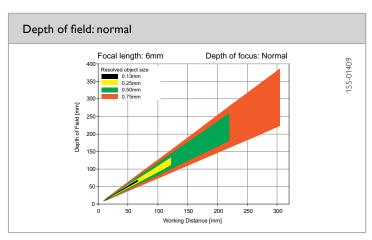
 $^{^{1}}$ Max, ripple \leq 5 $\rm V_{ss}$ $\,$ 2 80 % air humidity, non-condensing

Illumination	Depth of field	Part number	Article number
White	Normal	V10C-CO-A2-W6	535-91073









Accessories		
Connection cables	From Page A-34	
Illumination Brackets	From Page A-27 From Page A-4	
Interface accessories	From Page A-38	

Advanced vision sensor for object detection, colour, 12 mm











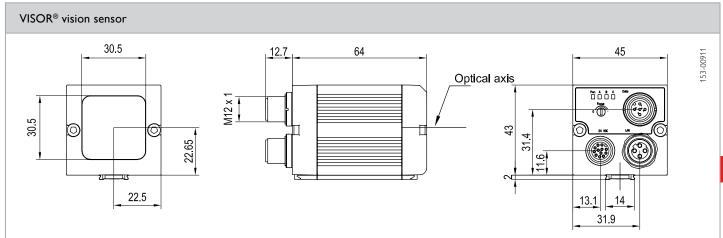
- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

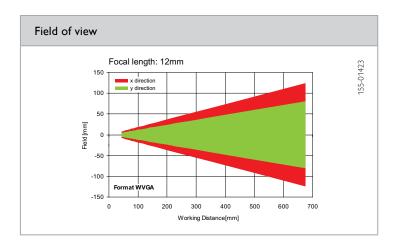
Optical data		Functions	
Resolution	736 × 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", colour	Detectors	Contour, pattern comparison, calliper
Integrated lens, focal length	12 mm, adjustable focal position		BLOB, contrast, brightness, grey level
Adjustment range	30 mm to infinity		colour value, colour area, colour list
Integrated illumination	White LEDs	Properties	Position tracking: X/Y and orientation pattern comparison / contour:
Minimum field of view, X x Y	8 x 6 mm ²		teach-in and detection of patterns ar contours; calliper: distance between edges; BLOB; grey threshold, brightne evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection wadustable tolerance; colour list: finding the most similar colours
		Typical cycle times	Typ. 30 ms pattern comparison; typ. 60 n contour; Typ. 12 ms calliper; typ. 50 m BLOB; typ. 2 ms brightness; typ. 2 ms ctrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ ms colour list
Electrical data		Mechanical data	
Operating voltage, +U _B	18 26.4V DC ¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Current consumption	≤ 120 mA	Enclosure rating	IP 67
(without illumination and I/O)		Material, housing	Aluminium, plastic
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic
Protective circuits	Reverse-polarity protection, U _B /	Ambient temperature: operation	0 +50° C²
	short-circuit protection of all outputs	Ambient temperature: storage	-20 +60° C²
Power On Delay	Approx. 13 s after Power on	Weight	Approx. 160 g
Outputs	PNP / NPN (switchable)	Plug connections	Supply and I/O M12, 12-pin
Max. output current (per output) Inputs	50 mA, 100 mA (pin 12) PNP/NPN High > U _R -1 V, Low < 3 V		Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4V	violation and impact resistance	E14 007 17-3-2
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs		

 $^{^{1}}$ Max, ripple \leq 5 $V_{\rm SS}$ - 2 80 % air humidity, non-condensing

Illumination	Depth of field	Part number	Article number
White	Normal	V10C-CO-A2-W12	535-91074









Accessories		
Connection cables	From Page A-34	
Illumination	From Page A-27	
Brackets	From Page A-4	
Interface accessories	From Page A-38	

Advanced vision sensor for object detection, colour, 25 mm











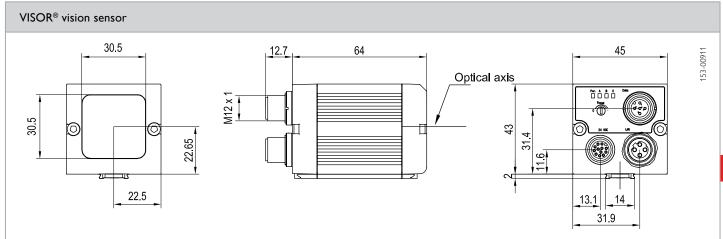
- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

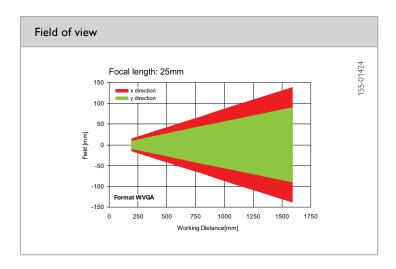
Optical data		Functions	
Resolution	736 × 480 pixels	Number of jobs / detectors	max, 255 / max, 255
CMOS	1/3", colour	Detectors	Contour, pattern comparison, call
Integrated lens, focal length	25 mm, adjustable focal position		BLOB, contrast, brightness, grey level
Adjustment range	140 mm to infinity		colour value, colour area, colour list
Integrated illumination	White LEDs	Properties	Position tracking: X/Y and orientation pattern comparison / contour:
Minimum field of view, X x Y	18 x 14 mm ²	Typical cycle times	teach-in and detection of patterns ar contours; calliper: distance between edges; BLOB; grey threshold, brightne evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection vadustable tolerance; colour list: finding the most similar colours Typ. 30 ms pattern comparison; typ. 60 r contour; Typ. 12 ms calliper; typ. 50 n
Electrical data		Mechanical data	BLOB; typ. 2 ms brightness; typ. 2 ms c trast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ ms colour list
Operating voltage, +U _R	18 26.4 V DC ¹	Dimensions	$65 \times 45 \times 45 \text{ mm}^3$ (without plug)
Current consumption	≤ 120 mA	Enclosure rating	IP 67
(without illumination and I/O)		Material, housing	Aluminium, plastic
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic
Protective circuits	Reverse-polarity protection, U _B /	Ambient temperature: operation	0 +50 °C²
	short-circuit protection of all outputs	Ambient temperature: storage	-20 +60 °C²
Power On Delay	Approx. 13 s after Power on	Weight	Approx. 160 g
Outputs	PNP / NPN (switchable)	Plug connections	Supply and I/O M12, 12-pin
Max. output current (per output)	50 mA, 100 mA (pin 12)	_	Ethernet M12, 4-pin
Inputs	PNP/NPN High $> U_B - 1 \text{ V, Low} < 3 \text{ V}$		Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4V		
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs		

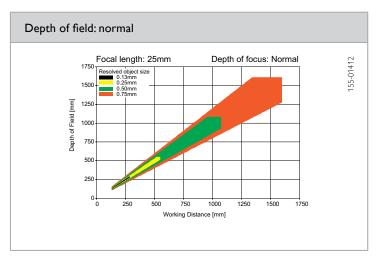
 $^{^{1}}$ Max. ripple \leq 5 V_{SS} $\,\,^{2}$ 80 % air humidity, non-condensing

Illumination	Depth of field	Part number	Article number
White	Normal	V10C-CO-A2-W25	535-91075









Accessories		
Connection cables	From Page A-34	
Illumination	From Page A-27	
Brackets	From Page A-4	
Interface accessories	From Page A-38	

Advanced vision sensor for object detection, colour, C-mount











PRODUCT HIGHLIGHTS

- Object detection in colour
- Reliable detection of very slight colour nuances or self-illuminating components
- · Powerful part finding and tracking
- User-friendly configuration and viewer software with hierarchical user rights
- Unlimited number of jobs and detectors
- Encoder input

Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", colour	Detectors	Contour, pattern comparison, calliper
Integrated lens, focal length	C-Mount		BLOB, contrast, brightness, grey level
Adjustment range	Dependent on lens		colour value, colour area, colour list
Integrated illumination	None	Properties	Position tracking: X/Y and orientation
Minimum field of view, X x Y	Dependent on lens	Typical cycle times	pattern comparison / contour: teach-in and detection of patterns ar contours; calliper: distance between edges; BLOB; grey threshold, brightne evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection w adustable tolerance; colour list: finding the most similar colours Typ. 30 ms pattern comparison; typ. 60 r contour; Typ. 12 ms calliper; typ. 50 m BLOB; typ. 2 ms grey threshold; typ. 2 ms crolour value; typ. 30 ms colour area; typ ms colour list
Electrical data		Mechanical data	
Operating voltage, +U _B	18 26.4V DC ¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Current consumption	≤ 120 mA	Enclosure rating	IP 65 ²
(without illumination and I/O)	- 200 A	Material, housing	Aluminium, plastic
Current consumption (without I/O)	≤ 200 mA	Material, front screen	Plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Ambient temperature: operation	0 +50 °C³
Power On Delay	Approx. 13 s after Power on	Ambient temperature: storage	-20 +60 °C³
Outputs	PNP / NPN (switchable)	Weight	Approx, 160 g
Max. output current (per output)	50 mA, 100 mA (pin 12)	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Inputs	PNP/NPN High > U _o -1 V, Low < 3 V		Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4V		
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs,		

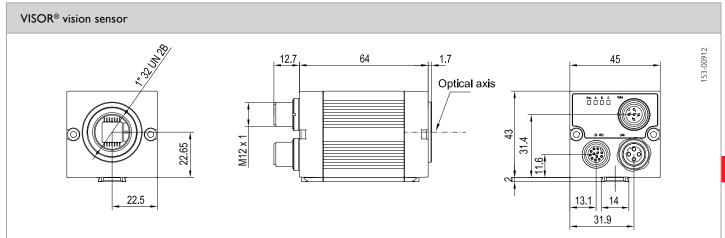
 $^{^{1}}$ Max. ripple $< 5 \, V_{ss}$ 2 With LPT45 C-mount protective casing

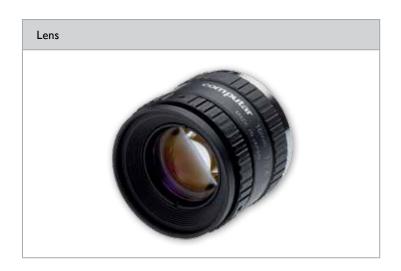
Part number Article number

V10C-CO-A2-C 535-91076

³ 80 % air humidity, non-condensing







	LO C 8	LO C 12	LO C 16	LO C 25	LO C 35	LO C 50	LO C 75
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51513	526-51514	526-51515	526-51516	526-51525	526-51113	526-51116

Accessories					
Connection cables	From Page A-34				
Illumination	From Page A-27				
Lenses	From Page A-25				
Brackets	From Page A-4				
Interface accessories	From Page A-38				