VISOR® Color

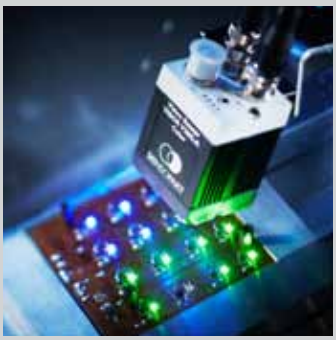
Vision sensor for the most precise object detection

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® Color.

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	112
V20C-CO-A2-xx	Advanced	1280 x 1024 pixels	C-mount	None	114
V10C-CO-S2-xx	Standard	736 x 480 pixels	6 mm	White	116
V10C-CO-S2-xx	Standard	736 x 480 pixels	12 mm	White	118
V10C-CO-A2-xx	Advanced	736 x 480 pixels	6 mm	White	120
V10C-CO-A2-xx	Advanced	736 x 480 pixels	12 mm	White	122
V10C-CO-A2-xx	Advanced	736 x 480 pixels	25 mm	White	124
V10C-CO-A2-xx	Advanced	736 x 480 pixels	C-mount	None	126

VISOR® V20 Color

Advanced vision sensor for object detection, colour, 12 mm

PRODUCT HIGHLIGHTS

- 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	
Resolution	1280 x 1024 pixels
CMOS	1/1.8", colour
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	16 x 13 mm²

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times[2]	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

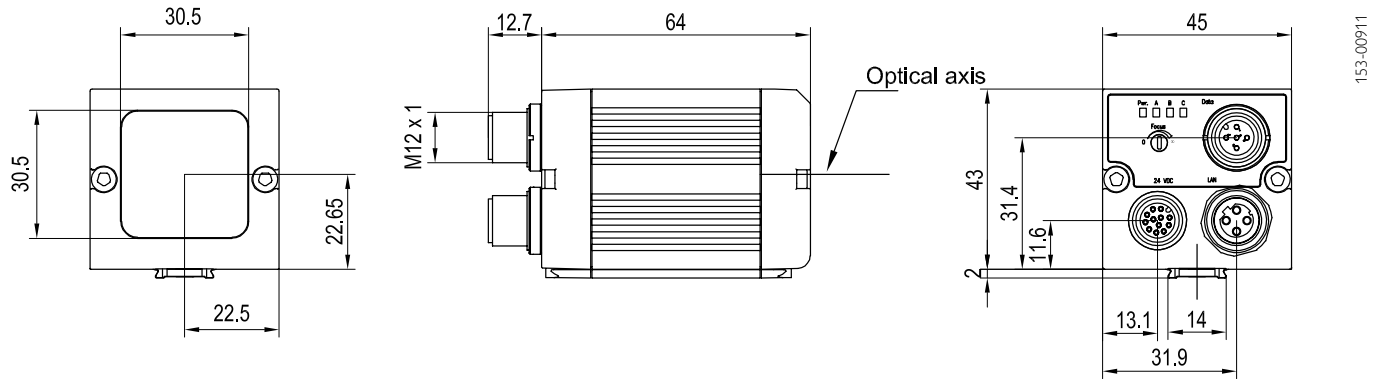
Mechanical data	
Dimensions	65 x 45 x 45 mm³ (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50° C[3]
Ambient temperature: storage	-20 … +60° C[3]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

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

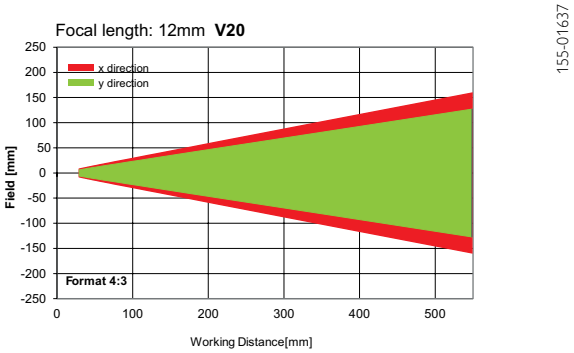
Illumination	Part number	Article number
White	V20C-CO-A2-W12	536-91020

Version: 07/2015. Subject to changes; diagrams similar

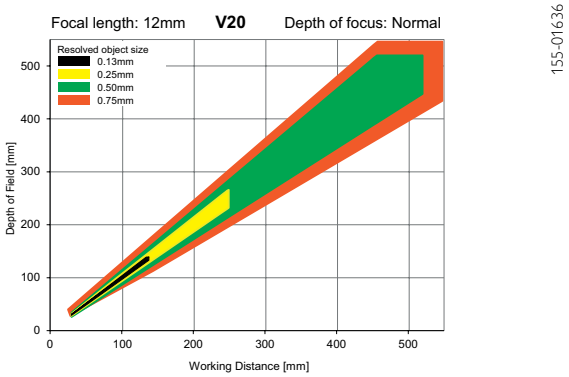
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V20 Color

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

PRODUCT HIGHLIGHTS

- 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	
Resolution	1280 x 1024 pixels
CMOS	1/1.8", colour
Integrated lens, focal length	C-Mount
Adjustment range	Dependent on lens
Integrated illumination	None
Minimum field of view, X x Y	Dependent on lens

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times[2]	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

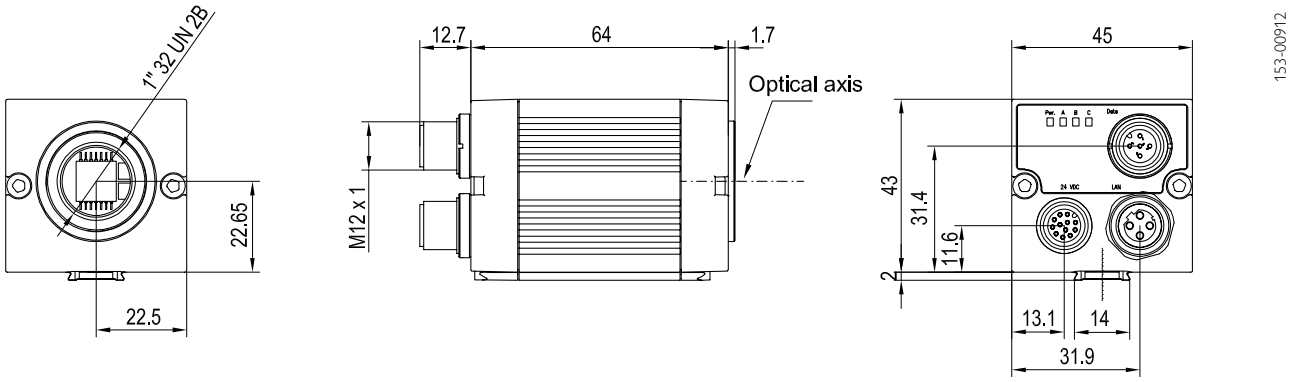
Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (without plug)
Enclosure rating	IP 65[3]
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

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

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

Version: 07/2015. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

	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

VISOR® V10 Color

Standard vision sensor for object detection, colour, 6 mm

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

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	6 mm, adjustable focal position
Adjustment range	6 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	5 x 4 mm²

Functions	
Number of jobs / detectors	8 / 32
Detectors	Position tracking X/Y and orientation via contour inspection; colour area
Properties	Position tracking X/Y and orientation; contour: teach-in and detection of contours; colour area: two-dimensional colour inspection with adustable tolerance
Typical cycle times	Typ. 30 ms position tracking Typ. 30 ms colour area

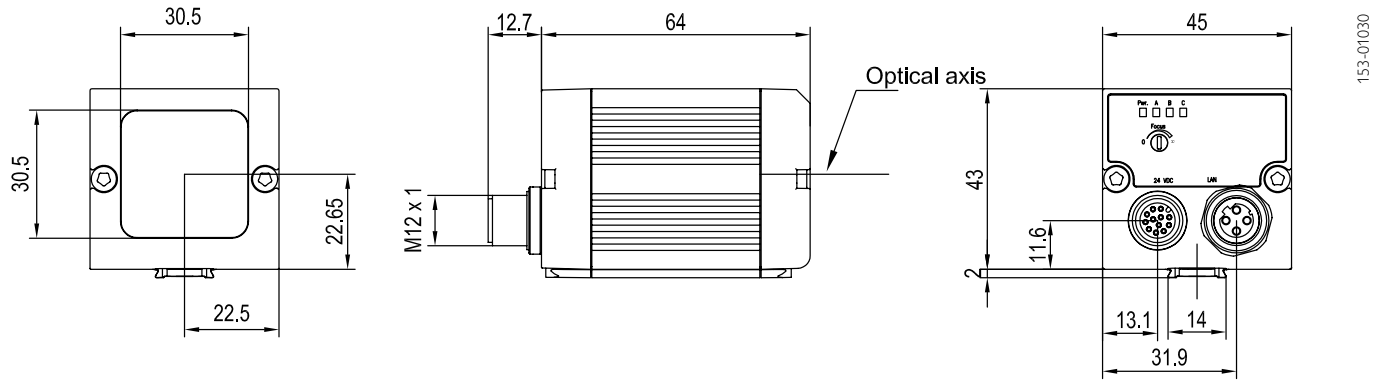
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 2 selectable inputs/outputs

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[2]
Ambient temperature: storage	-20 … +60 °C[2]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration and impact resistance	EN 60947-5-2

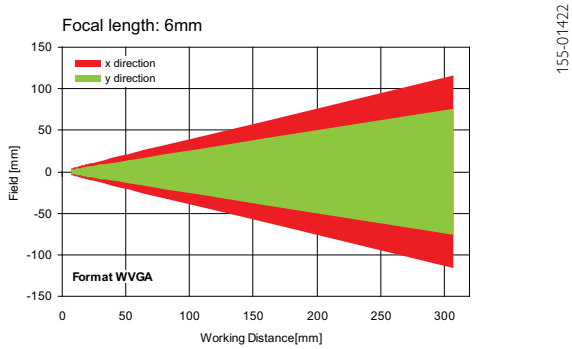
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

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

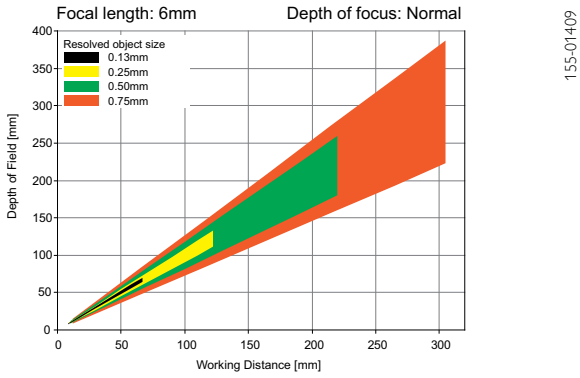
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V10 Color

Standard vision sensor for object detection, colour, 12 mm

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

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	8 x 6 mm²

Functions	
Number of jobs / detectors	8 / 32
Detectors	Position tracking X/Y and orientation via contour inspection; colour area
Properties	Position tracking X/Y and orientation; contour: teach-in and detection of contours; colour area: two-dimensional colour inspection with adustable tolerance
Typical cycle times	Typ. 30 ms position tracking Typ. 30 ms colour area

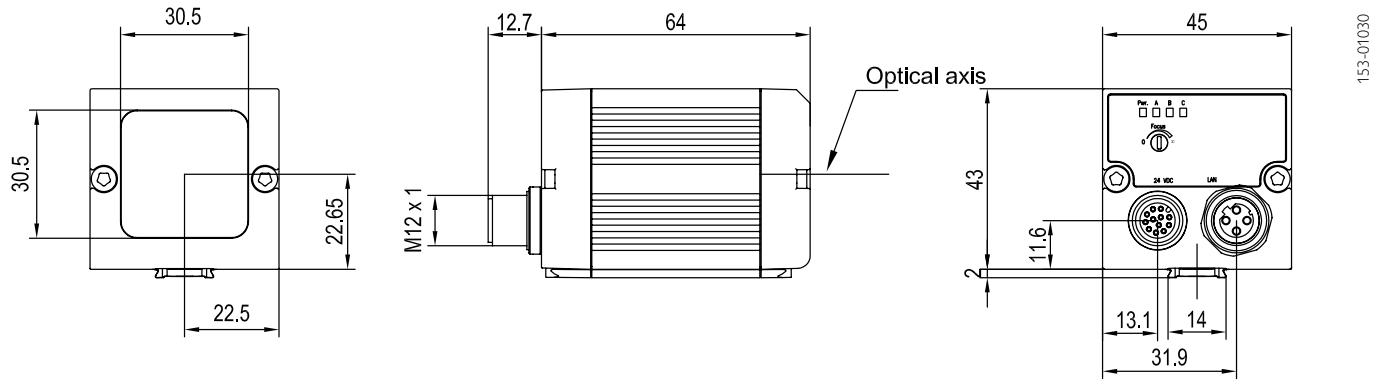
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 2 selectable inputs/outputs

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[2]
Ambient temperature: storage	-20 … +60 °C[2]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration and impact resistance	EN 60947-5-2

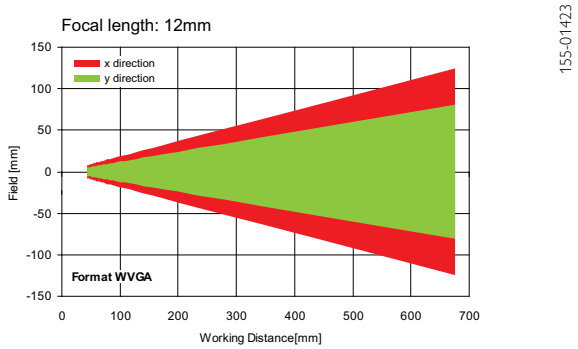
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

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

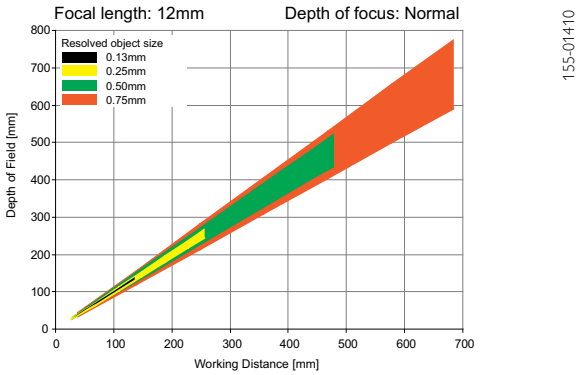
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V10 Color

Advanced vision sensor for object detection, colour, 6 mm

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	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	6 mm, adjustable focal position
Adjustment range	6 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	5 x 4 mm²

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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

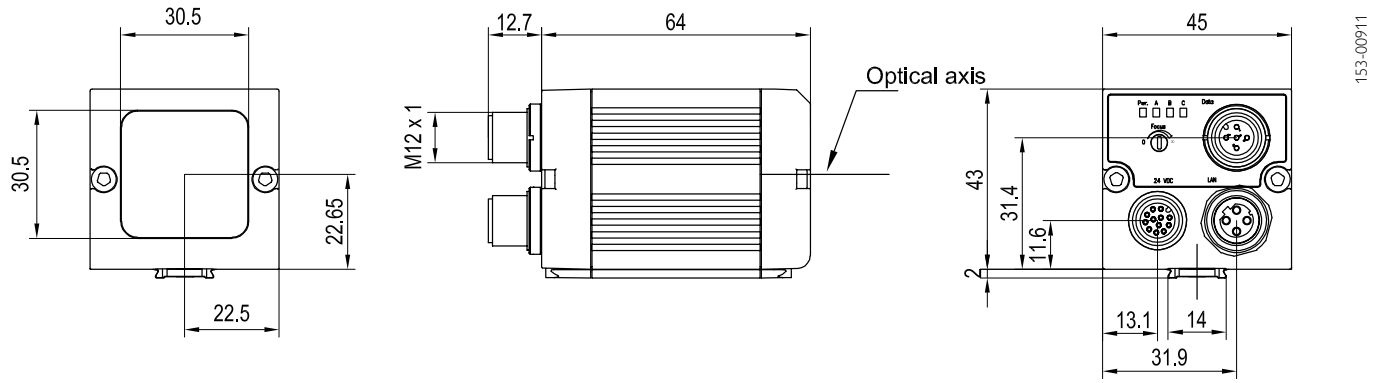
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[2]
Ambient temperature: storage	-20 … +60 °C[2]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

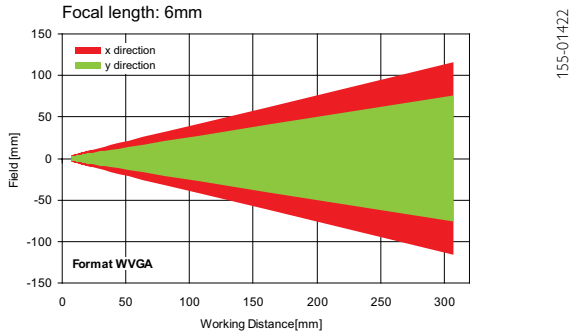
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

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

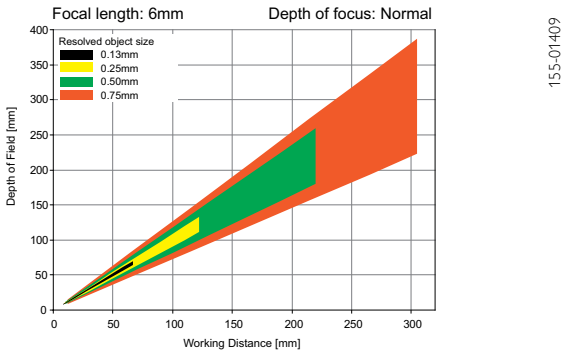
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V10 Color

Advanced vision sensor for object detection, colour, 12 mm

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	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	8 x 6 mm²

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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

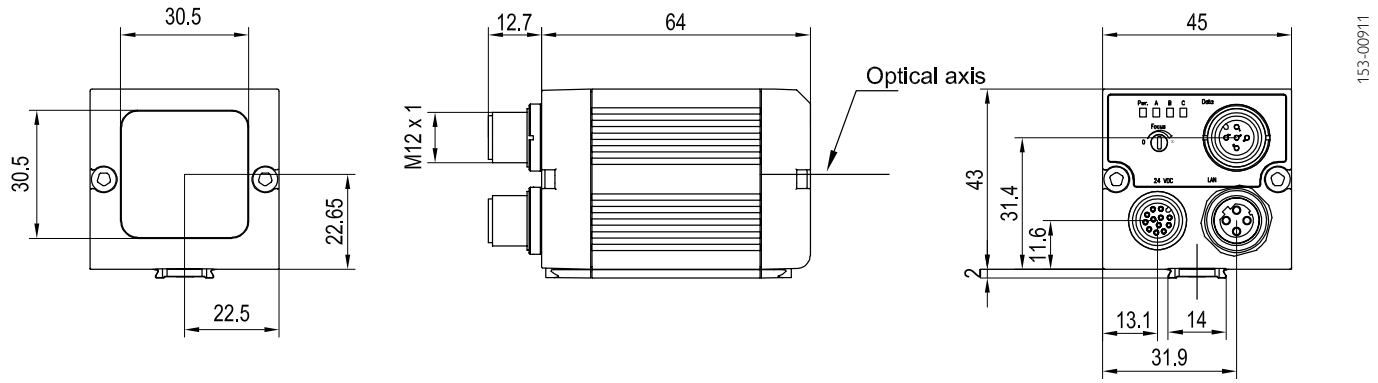
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50° C[2]
Ambient temperature: storage	-20 … +60° C[2]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

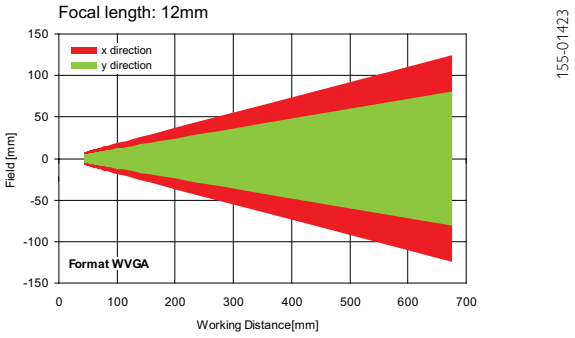
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

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

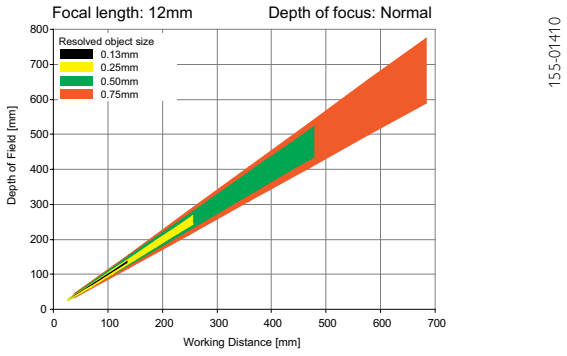
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V10 Color

Advanced vision sensor for object detection, colour, 25 mm

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	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	25 mm, adjustable focal position
Adjustment range	140 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	18 x 14 mm[2]

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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

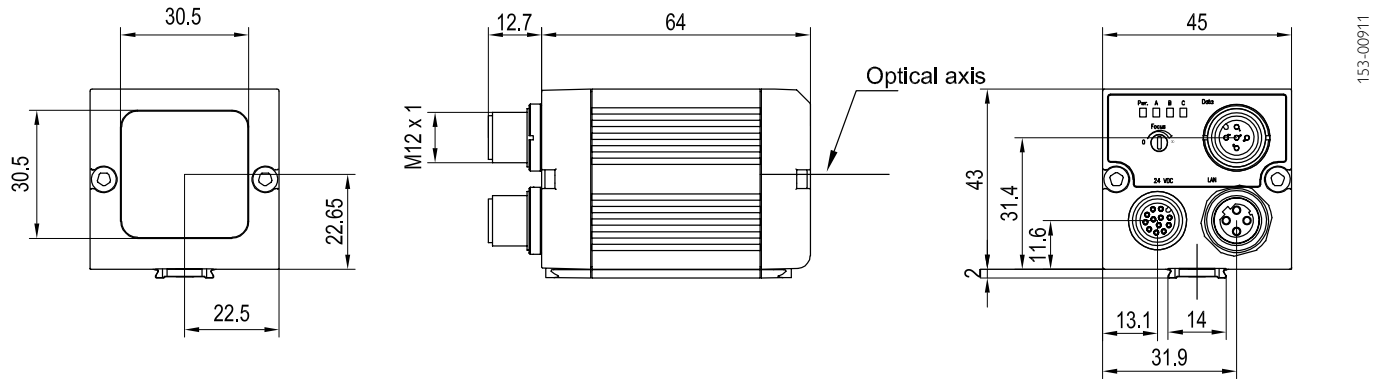
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[2]
Ambient temperature: storage	-20 … +60 °C[2]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

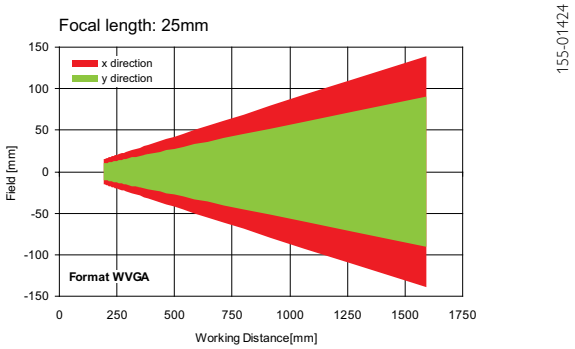
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

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

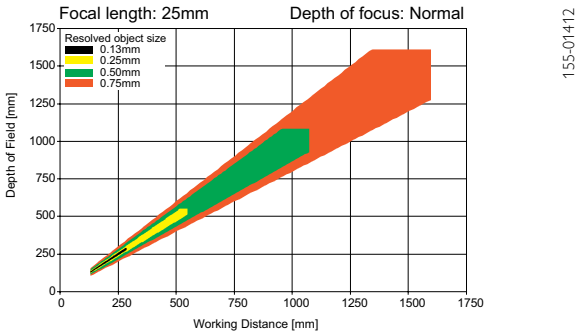
VISOR® vision sensor



Field of view



Depth of field: normal



Accessories

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

VISOR® V10 Color

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	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	C-Mount
Adjustment range	Dependent on lens
Integrated illumination	None
Minimum field of view, X x Y	Dependent on lens

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, colour value, colour area, colour list
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour area: two-dimensional colour inspection with adustable tolerance; colour list: finding the most similar colours
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour; Typ. 8 ms calliper; typ. 30 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	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Approx. 13 s after Power on
Outputs	PNP / NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kOhm
Encoder input	High > 4 V
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

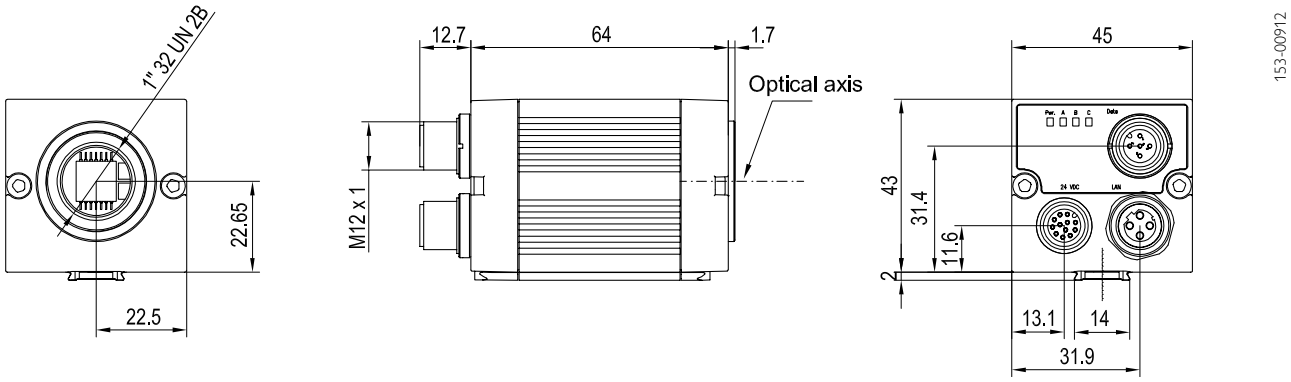
Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (without plug)
Enclosure rating	IP 65[2]
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[3]
Ambient temperature: storage	-20 … +60 °C[3]
Weight	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

[1] Max. ripple < 5 V_{SS} [2] With LPT45 C-mount protective casing [3] 80 % air humidity, non-condensing

Part number	Article number
V10C-CO-A2-C	535-91076

Version: 07/2015. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

	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