

VISOR® object sensor for part detection

Detects the right part in the wrong place and vice versa



Glue dot present?
Early detection by monitoring presence – in this case caps for the beverages packaging industry – long before quality assurance. Preventing expensive rejections.



Position and position tolerance measurement:
The sensor "learns" the contours and their direction from a picture, and reacts reliably to deviations. The sensor responds correctly even if a nut is the wrong way round.



Vision sensor now with calliper function
Sensor manufacturer SensoPart Industriesensorik has extended its existing range of VISOR® vision sensors with the addition of a new calliper function. The latest algorithms enable the detection of distances, widths and lengths as well as outer and inner diameters with subpixel accuracy. The calliper function is available in both the monochrome and colour versions of VISOR® V20 with a 1.3 megapixel resolution.

HIGHLIGHTS OF VISOR® OBJECT SENSOR

- User-friendly configuration and viewer software with hierarchical user rights and online help
- Powerful part-finding and tracking
- Precise position determination: x/y-position and orientation
- Comprehensive logic functions for the digital switching outputs
- Flexible definition of output data (header, trailer, net data)
- Support of EtherNet/IP and PROFINET
- Comprehensive possibilities for archiving pictures and data

Objects that sometimes appear in unexpected positions and have complex shapes and details – classic switching sensors would be completely overwhelmed by such detection tasks. Not the VISOR® object sensor from SensoPart: it always maintains its overview, detecting defective parts, parts in the wrong position, wrong orientation, wrong sequence or a combination of them all – in an instant. With its highly precise position and orientation detection, our VISOR® object sensor is one of the best in its class.

Seven detectors plus position detection

A total of seven detectors are available for inspection tasks and evaluations: pattern comparison, contour detection, calliper, BLOB, brightness, grey threshold and contrast detection. Position tracking offers permits reliable detection of those features that are not always present in precisely the taught-in position. All evaluations take place relative to the current part position and orientation, without them having to be defined for every possible position of an individual feature. This powerful tool allows you to solve even demanding applications confidently!

VISOR® Object Sensors – Product Overview					
	Firmware Option	Resolution	Focal Length	Integrated illumination	Page
V20-OB-A2-xxx	Advanced	1280 x 1024 pixels	12 mm	White, red or infrared LEDs	64
V20-OB-A2-xxx	Advanced	1280 x 1024 pixels	C-mount	None	66
V10-OB-S1-xxx	Standard	736 x 480 pixels	6 mm	White, red or infrared LEDs	68
V10-OB-S1-xxx	Standard	736 x 480 pixels	12 mm	White, red or infrared LEDs	70
V10-OB-A1-xxx	Advanced	736 x 480 pixels	6 mm	White, red or infrared LEDs	72
V10-OB-A1-xxx	Advanced	736 x 480 pixels	12 mm	White, red or infrared LEDs	74
V10-OB-A1-xxx	Advanced	736 x 480 pixels	25 mm	White, red or infrared LEDs	76
V10-OB-A1-xxx	Advanced	736 x 480 pixels	C-mount	None	78



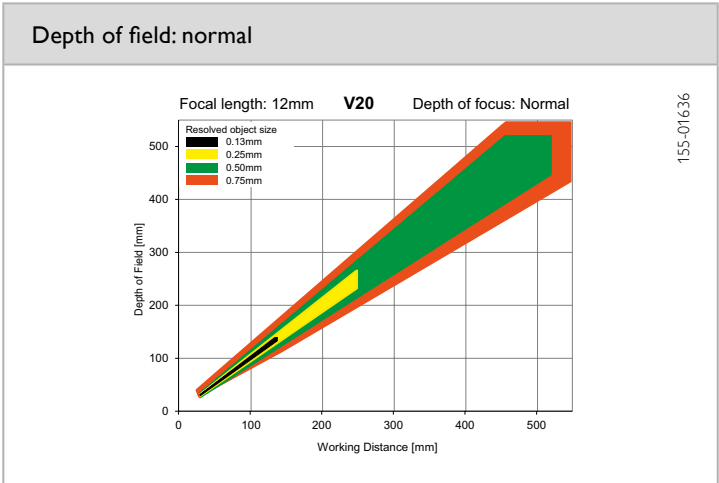
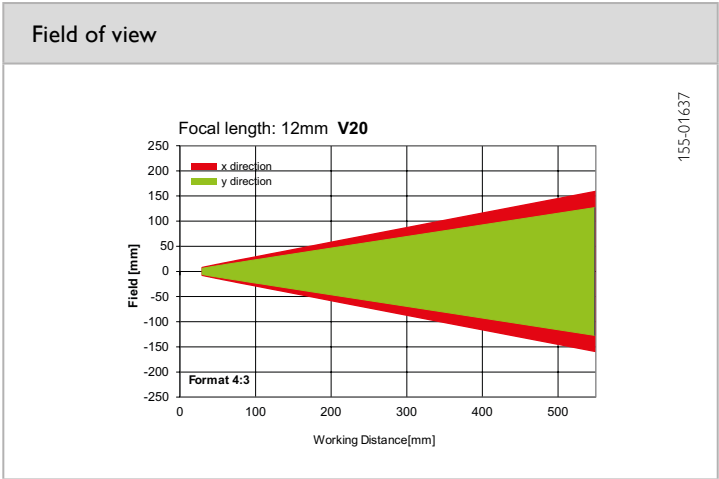
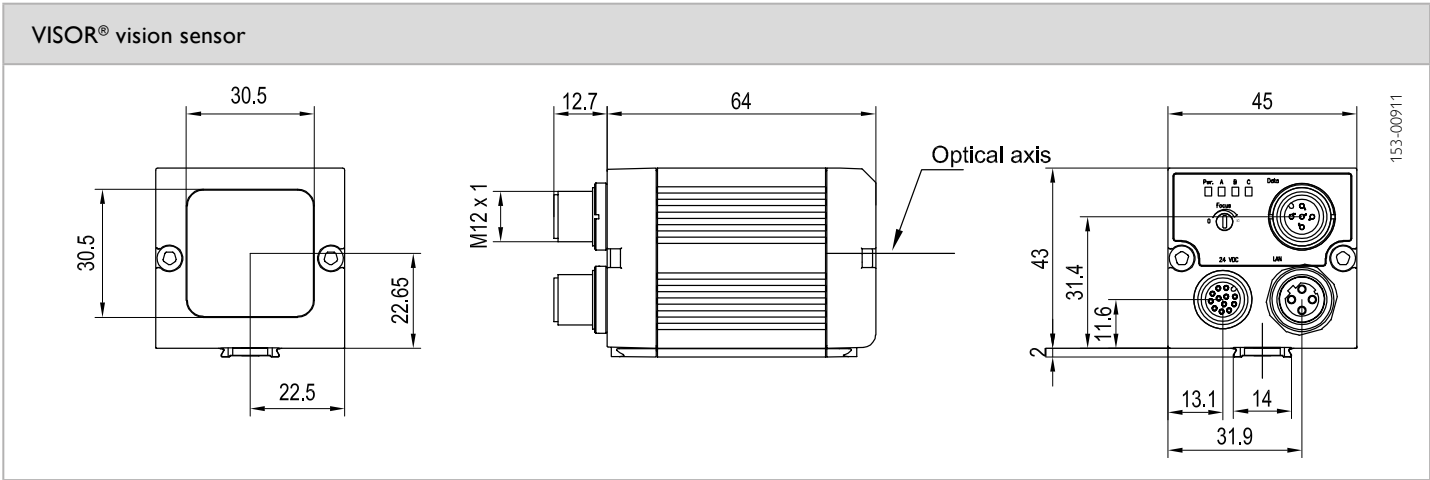
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1.3 mega pixel
- Powerful part-finding and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic functions for digital switching outputs
- Encoder input

Optical data		Functions	
Resolution	1280 x 1024 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/1.8", monochrome	Detectors	Contour; pattern comparison, calliper; BLOB, contrast, brightness, grey level
Integrated lens, focal length	12 mm, adjustable focal position	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
Adjustment range	30 mm to infinity		
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X x Y	16 x 13 mm²	Typical cycle times²	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4V DC¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50° C³
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60° C³
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4 V		
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	V20-OB-A2-W12	536-91011
Red	V20-OB-A2-R12	536-91012
Infrared	V20-OB-A2-I12	536-91013



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

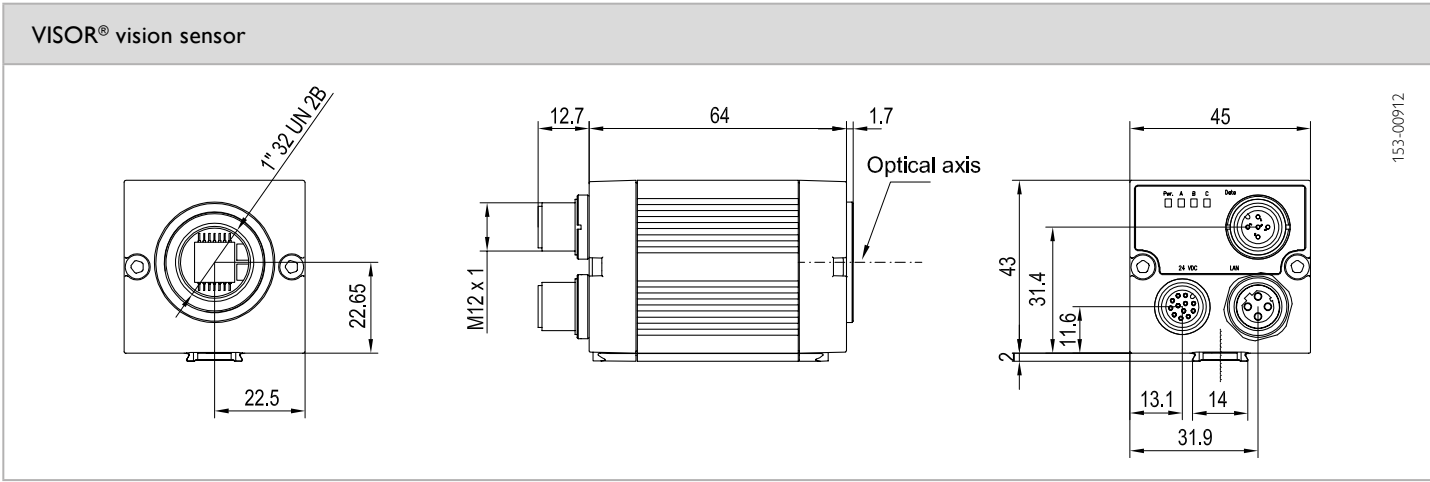


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Optical data		Functions	
Resolution	1280 × 1024 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/1.8", monochrome	Detectors	Contour; pattern comparison, calliper; BLOB, contrast, brightness, grey level
Integrated lens, focal length	C-Mount	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
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X × Y	Dependent on lens	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC ¹	Dimensions	65 × 45 × 45 mm ³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 65 ³
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C ⁴
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4 V		
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 × 480 Pixel) ³ With LPT45 C-mount protective casing ⁴ 80 % air humidity, non-condensing

Part number	Article number
V20-OB-A2-C	536-91010



	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



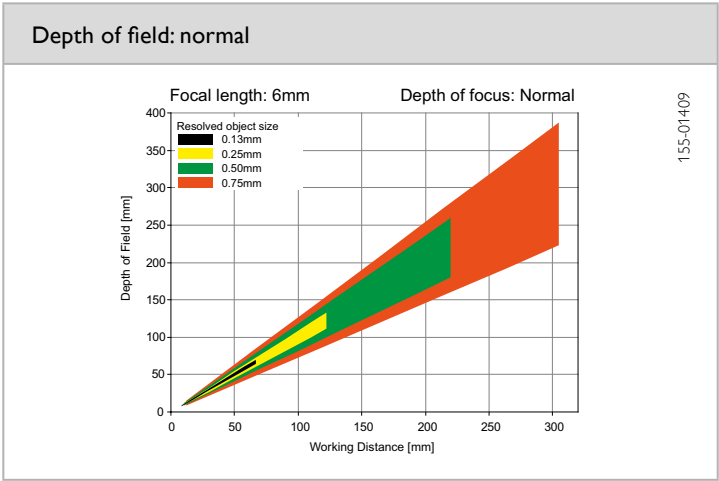
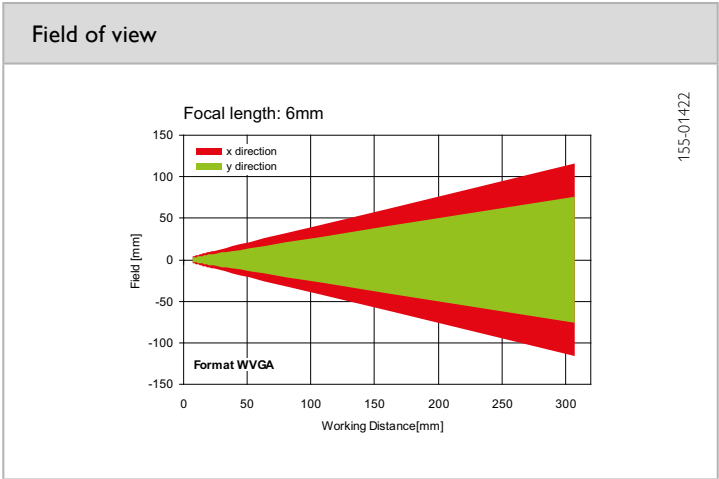
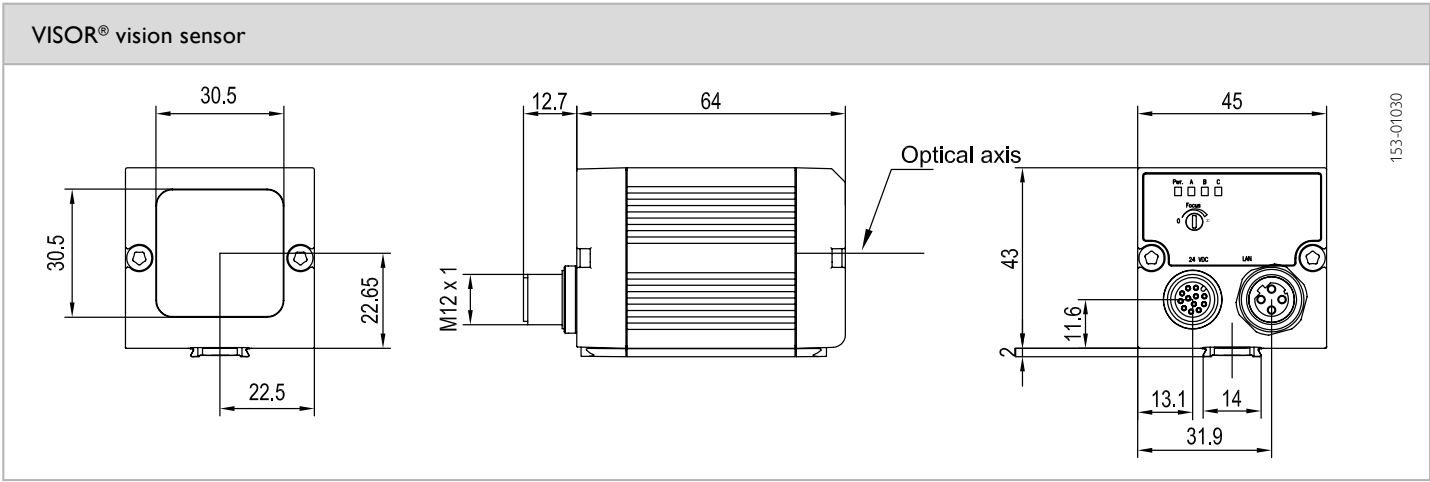
PRODUCT HIGHLIGHTS

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- Detectors for object detection
- Powerful part-finding and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic functions for digital switching outputs

Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	8 / 32
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison, contrast, brightness, grey level
Integrated lens, focal length	6 mm, adjustable focal position	Properties	Position tracking: X/Y and orientation; Pattern comparison / contour: teach-in and detection of patterns and contours; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast
Adjustment range	6 mm to infinity		
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X x Y	5 x 4 mm²	Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC ¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C ²
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C ²
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs, 2 selectable inputs/outputs		

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

Illumination	Depth of field	Part number	Article number
White	Normal	V10-OB-S1-W6	535-91008
Red	Normal	V10-OB-S1-R6	535-91010
Infrared	Normal	V10-OB-S1-I6	535-91046



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



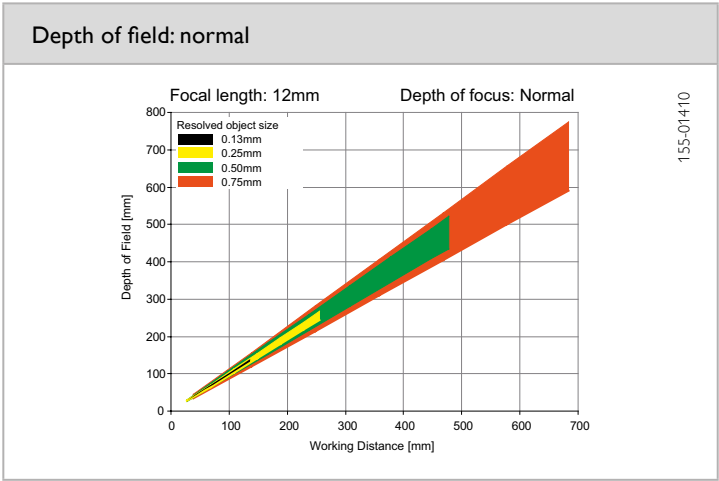
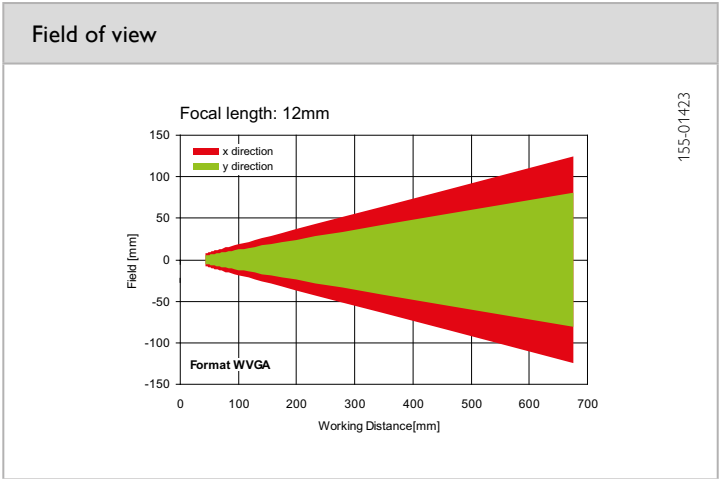
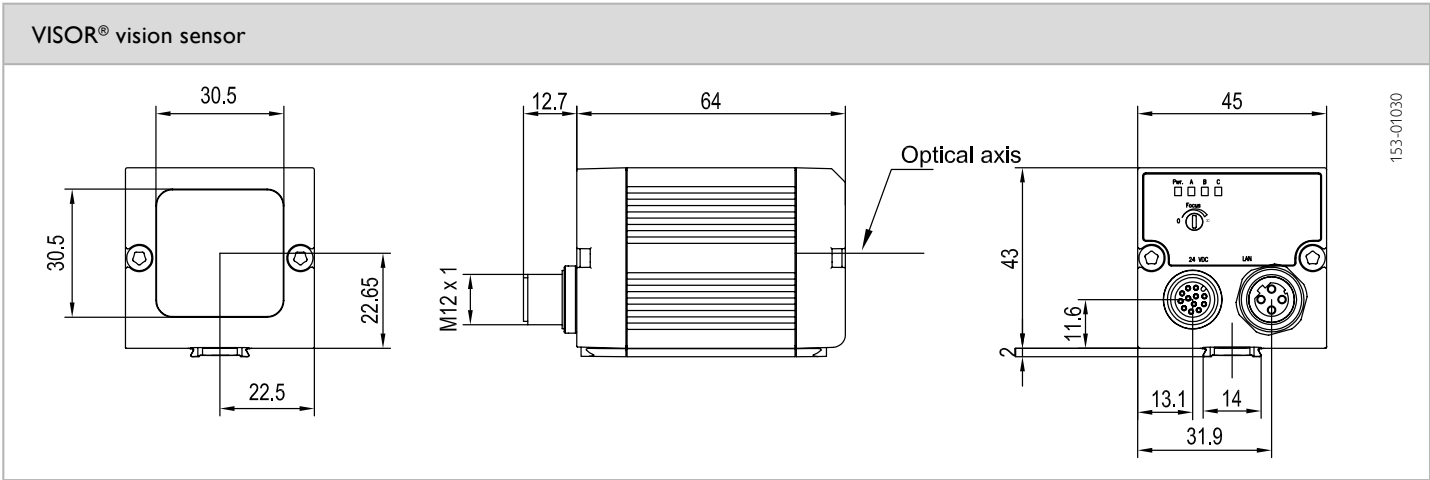
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- Detectors for object detection
- Powerful part-finding and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic functions for digital switching outputs

Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	8 / 32
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison, contrast, brightness, grey level
Integrated lens, focal length	12 mm, adjustable focal position	Properties	Position tracking: X/Y and orientation; Pattern comparison / contour: teach-in and detection of patterns and contours; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast
Adjustment range	30 mm to infinity	Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X x Y	8 x 6 mm²		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC¹	Dimensions	65 x 45 x 45 mm³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C²
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C²
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs, 2 selectable inputs/outputs		

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

Illumination	Depth of field	Part number	Article number
White	Normal	V10-OB-S1-W12	535-91009
Red	Normal	V10-OB-S1-R12	535-91011
Infrared	Normal	V10-OB-S1-I12	535-91047



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



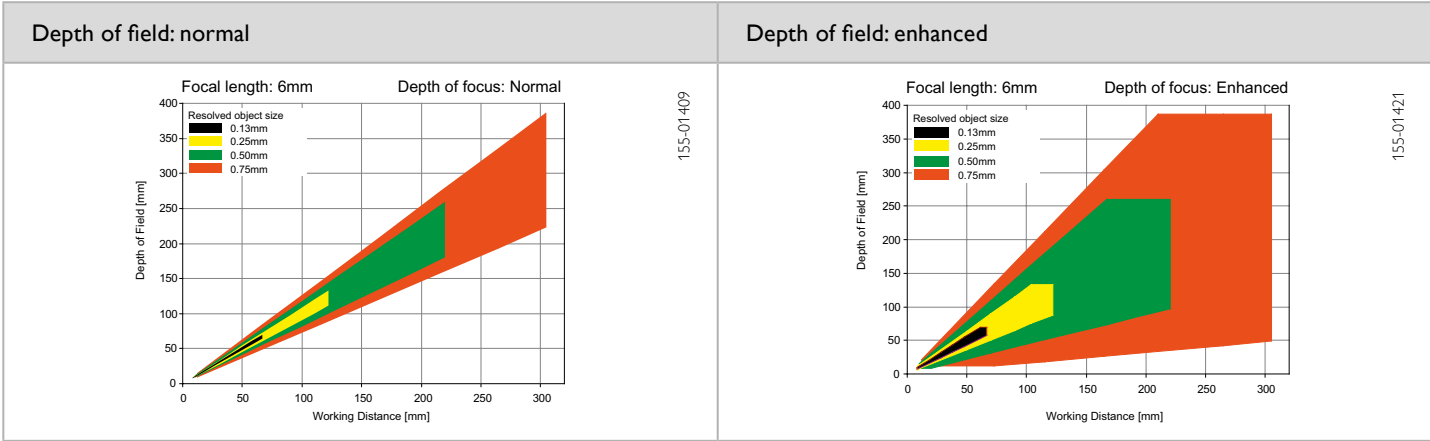
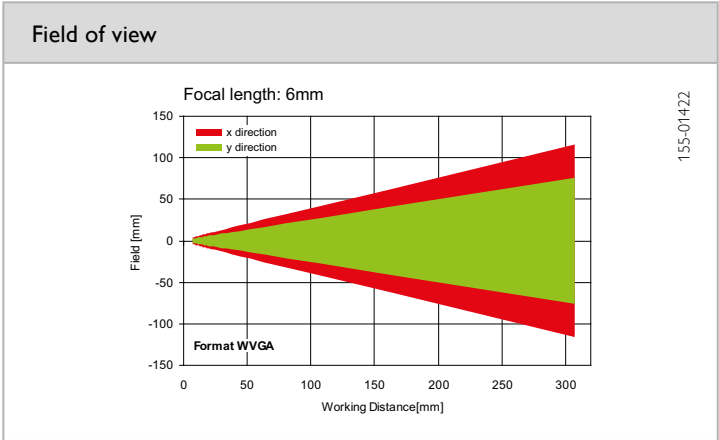
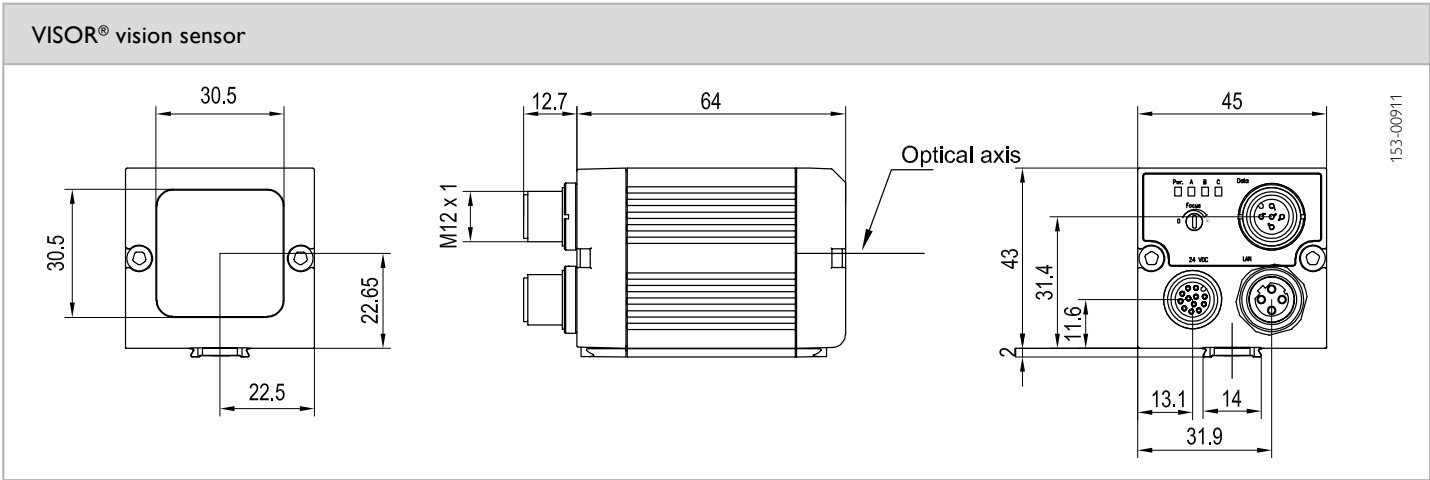
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Powerful part-finding and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic functions for digital switching outputs
- Encoder input

Optical data		Functions	
Resolution	736 x 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison, calliper; BLOB, contrast, brightness, grey level
Integrated lens, focal length	6 mm, adjustable focal position	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
Adjustment range	6 mm to infinity		
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X x Y	5 x 4 mm²	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC ¹	Dimensions	65 x 45 x 45 mm ³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C ²
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C ²
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4 V		
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFINET		
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs		

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Illumination	Depth of field	Part number	Article number
White	Normal	V10-OB-A1-VW6	535-91001
White	Enhanced	V10-OB-A1-VW6D	535-91013
Red	Normal	V10-OB-A1-R6	535-91003
Red	Enhanced	V10-OB-A1-R6D	535-91016
Infrared	Normal	V10-OB-A1-I6	535-91006
Infrared	Enhanced	V10-OB-A1-I6D	535-91019



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



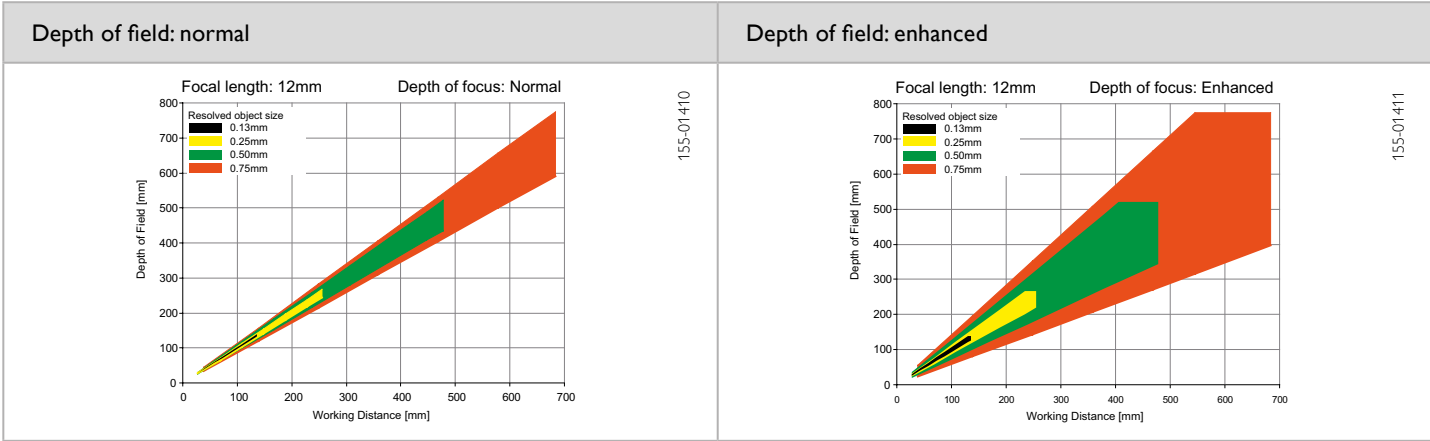
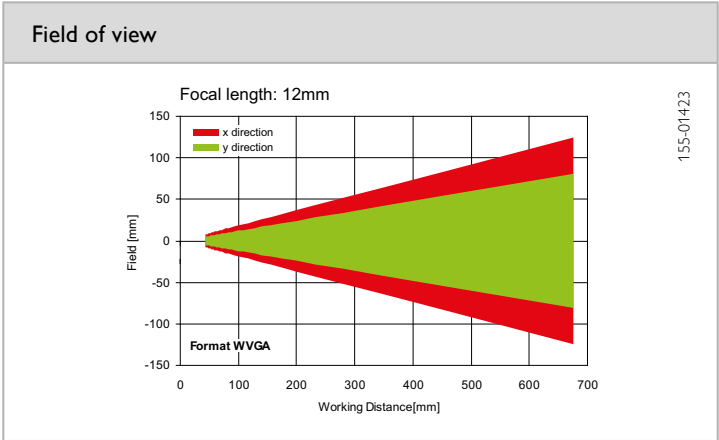
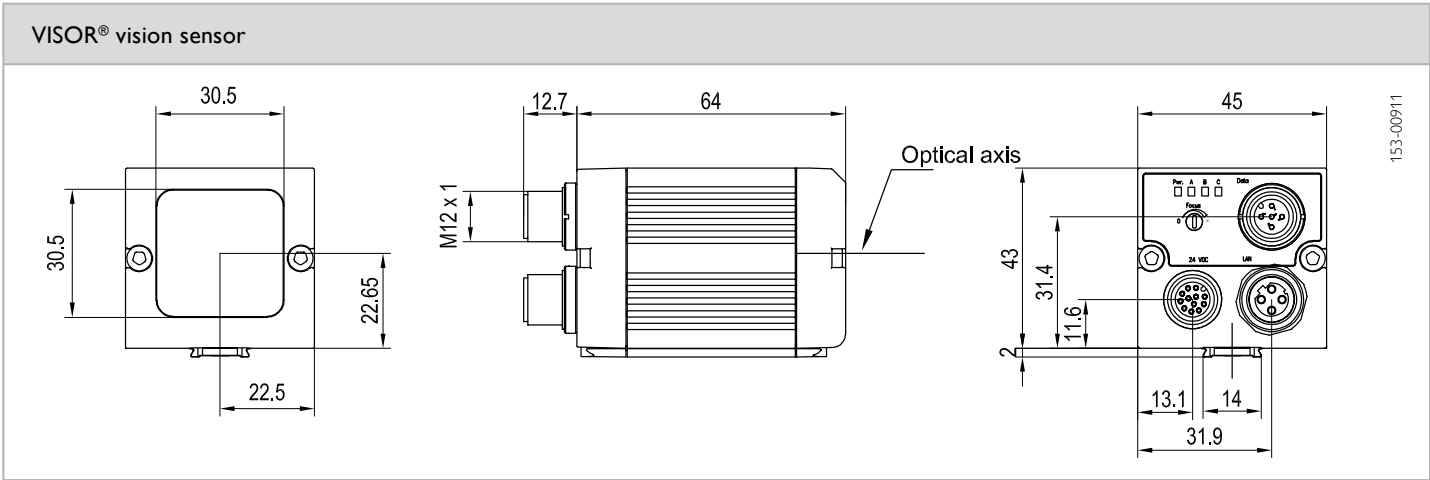
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Resolution	736 x 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison; calliper; BLOB; contrast; brightness; grey level
Integrated lens, focal length	12 mm, adjustable focal position	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
Adjustment range	30 mm to infinity		
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X x Y	8 x 6 mm²	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC ¹	Dimensions	65 x 45 x 45 mm ³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50° C ²
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60° C ²
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4 V		
Interfaces	Ethernet (LAN), RS422, RS232, EtherNet/IP, PROFIBUS		
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs		

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Illumination	Depth of field	Part number	Article number
White	Normal	V10-OB-A1-W12	535-91002
White	Enhanced	V10-OB-A1-W12D	535-91014
Red	Normal	V10-OB-A1-R12	535-91004
Red	Enhanced	V10-OB-A1-R12D	535-91017
Infrared	Normal	V10-OB-A1-I12	535-91007
Infrared	Enhanced	V10-OB-A1-I12D	535-91020



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



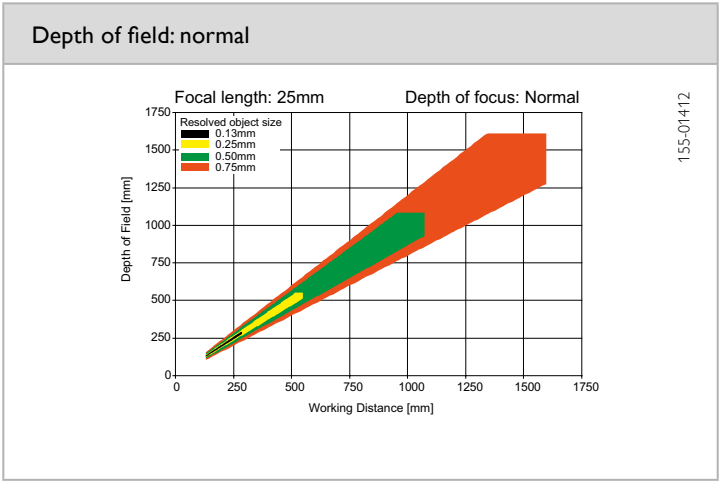
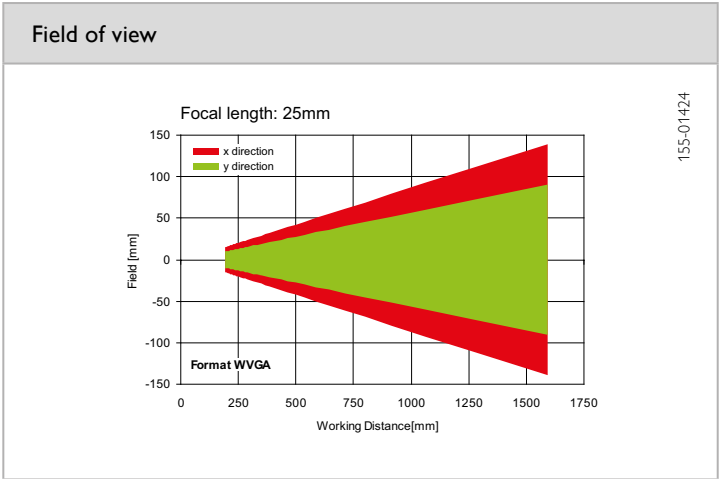
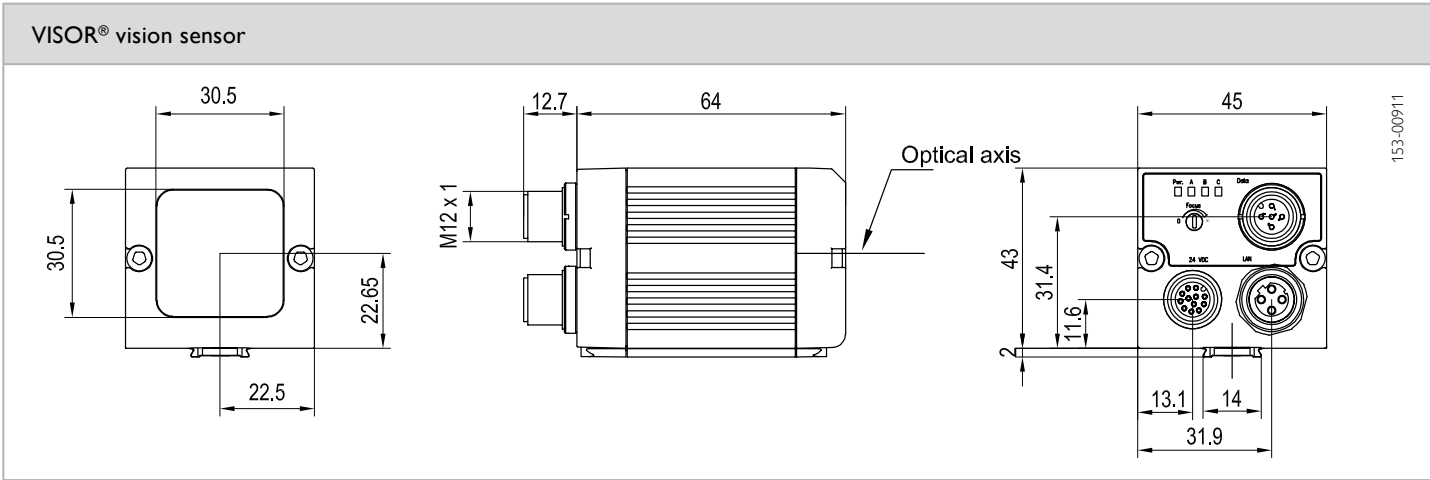
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- Encoder input

Optical data		Functions	
Resolution	736 × 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison, calliper; BLOB, contrast, brightness, grey level
Integrated lens, focal length	25 mm, adjustable focal position	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
Adjustment range	140 mm to infinity		
Integrated illumination	White, red, infrared LEDs		
Minimum field of view, X × Y	18 × 14 mm²	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4 V DC ¹	Dimensions	65 × 45 × 45 mm ³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 67
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C ²
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C ²
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
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Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs		

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Illumination	Depth of field	Part number	Article number
White	Normal	V10-OB-A1-W25	535-91012
Red	Normal	V10-OB-A1-R25	535-91015
Infrared	Normal	V10-OB-A1-I25	535-91018



Accessories	
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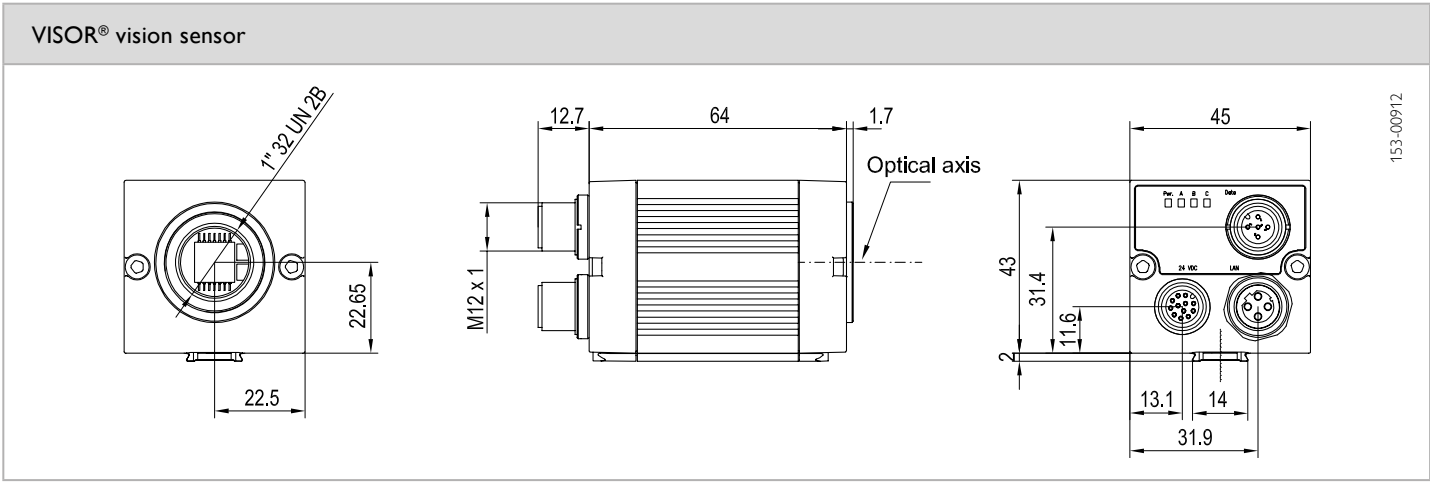


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 - Encoder input

Optical data		Functions	
Resolution	736 × 480 pixels	Number of jobs / detectors	max. 255 / max. 255
CMOS	1/3", monochrome	Detectors	Contour; pattern comparison, calliper; BLOB, contrast, brightness, grey level
Integrated lens, focal length	C-Mount	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
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X × Y	Dependent on lens	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
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 26.4V DC ¹	Dimensions	65 × 45 × 45 mm ³ (without plug)
Current consumption (without illumination and I/O)	≤ 120 mA	Enclosure rating	IP 65 ²
Current consumption (without I/O)	≤ 200 mA	Material, housing	Aluminium, plastic
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, front screen	Plastic
Power On Delay	Ca. 13 s after Power on	Ambient temperature: operation	0 ... +50 °C ³
Outputs	PNP / NPN (switchable)	Ambient temperature: storage	-20 ... +60 °C ³
Max. output current (per output)	50 mA, 100 mA (pin 12)	Weight	Ca. 160 g
Inputs	PNP/NPN High > U _B -1 V, Low < 3 V	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Input resistance	> 20 kOhm	Vibration and impact resistance	EN 60947-5-2
Encoder input	High > 4 V		
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 LPT45 C-mount protective casing ³ 80 % air humidity, non-condensing

Part number	Article number
V10-OB-A1-C	535-91005



	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
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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