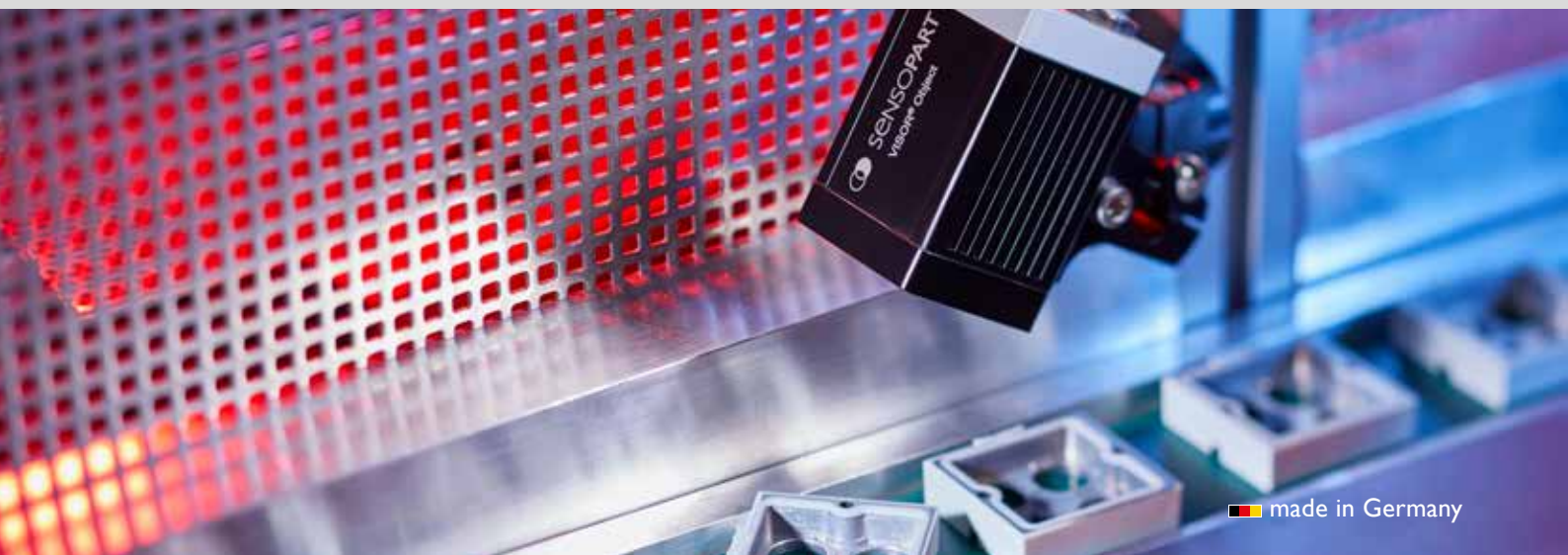


VISOR® Object

Detects the right part in the wrong place and vice versa.



The one with a BLOB: With the BLOB detector (Binary Large Object), the VISOR® detects even small differences between objects, counts parts or detects whether a part is face up or face down.



The same or not the same?
The VISOR® detects even the smallest of color nuances more reliably than the human eye. This allows, for example, the detection of color deviations or the sorting of parts by color.

HIGHLIGHTS OF VISOR® OBJECT

- Detectors for presence and completeness checks, position control and simple measurement tasks
- Precise position determination: x/y-position and orientation
- Easy to use calibration for measuring tasks. Conversion into mm and correction of distortion and perspective
- Improved object detection through additional color information
- Extensive logic and calculation functions allow the complete evaluation directly on the sensor
- Flexible definition of output data
- EtherNet/IP PROFINET (conformance class B), EtherNet (TCP/IP) supported
- Comprehensive possibilities for archiving images 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 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. The comprehensive calibration functions range from a simple scaling factor to the correction of image and lens distortions at a mouse click. With its highly precise position and orientation detection, our VISOR® Object is one of the best in its class.

Seven detectors plus position detection

An expansive range of detectors is available for inspection tasks and evaluations: pattern matching, contour detection, calliper, BLOB, brightness, grey threshold and contrast detection. Position tracking offers reliable detection of those features that do not repeatedly appear in the original position taught. 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. The color version features detectors for color detection, enabling VISOR® to also distinguish between the finest nuances in shade. This powerful tool allows you to solve even demanding applications confidently!

VISOR® Object – Product overview					
	Product variant	Resolution	Focal Length	Integrated illumination	Page
V50x-OB-A3-xxx	Advanced	2560 x 1936 mono/color	C-Mount	None	164
V20x-OB-A3-xxx	Advanced	1440 x 1080 mono/color	Wide	White, red ¹ or infrared ¹ LEDs	166
V20x-OB-A3-xxx			Medium	White, red ¹ or infrared ¹ LEDs	168
V20x-OB-A3-xxx			Narrow	White, red ¹ or infrared ¹ LEDs	170
V20x-OB-A3-C-2			C-Mount	None	172
V10x-OB-S3-xxx	Standard	800 x 600 mono/color	Wide	White, red ¹ or infrared ¹ LEDs	174
V10x-OB-S3-xxx			Medium	White, red ¹ or infrared ¹ LEDs	176
V10x-OB-S3-xxx			Narrow	White, red ¹ or infrared ¹ LEDs	178
V10x-OB-A3-xxx	Advanced	800 x 600 mono/color	Wide	White, red ¹ or infrared ¹ LEDs	180
V10x-OB-A3-xxx			Medium	White, red ¹ or infrared ¹ LEDs	182
V10x-OB-A3-xxx			Narrow	White, red ¹ or infrared ¹ LEDs	184
V10x-OB-A3-C-2			C-Mount	None	186

¹ Only with monochrome version

VISOR® V50 Object Advanced, C-Mount

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



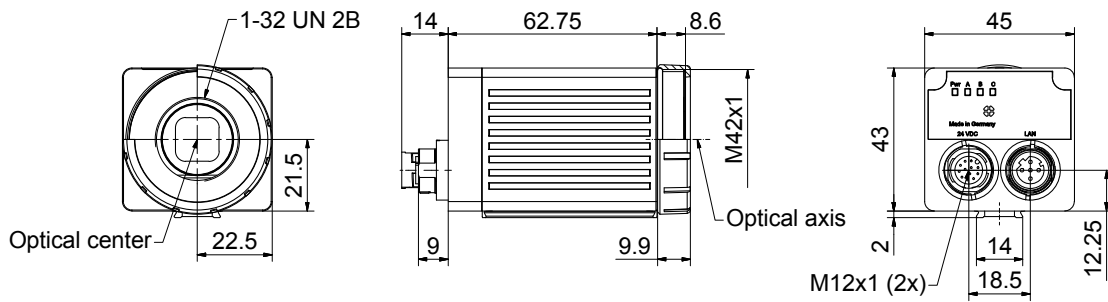
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1,5 megapixel chip
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	2560 x 1936 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/1.8", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value¹: output of color values; Color area¹: area inspection of colors, with selectable tolerance; Color list¹: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	C-mount		
Pixel size	2,8 µm x 2,8 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	No		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30V DC ²	Dimensions	70,4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 ³
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Color hardware ² max. ripple < 5V_{ss} ³ only with protective casing ⁴ 80 % air humidity, noncondensing

Vision-Sensor VISOR® C-mount



153-13555

3



Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories	
V50-OB-A3-C-2	635-91016	Connection cables	From Page A-46
V50C-OB-A3-C-2	635-91019	Illumination	From Page A-33
		Lenses	From Page A-28
		Brackets	From Page A-4
		Interface accessories	From Page A-53


VISOR® V20 Object Advanced, wide field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



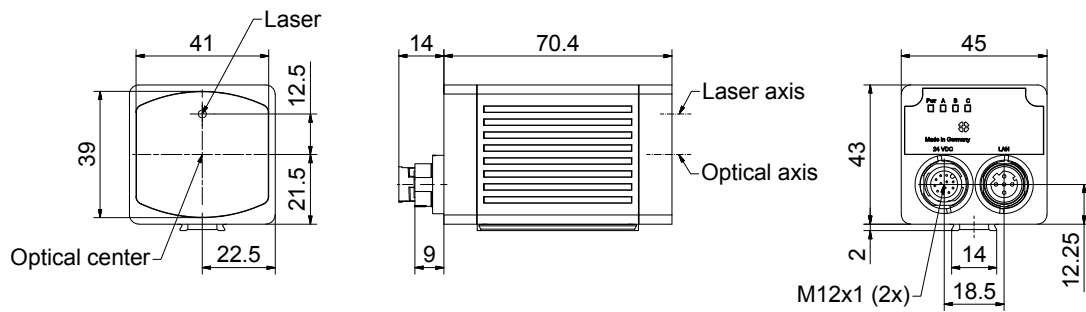
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1,5 megapixel chip
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	6.5 (wide)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	10 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	6 x 4 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30V DC ³	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{SS} ⁴ 80 % air humidity, noncondensing

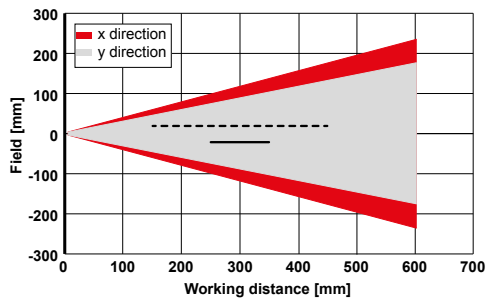
VISOR® vision sensor



153-13554

3

Field of view V20, wide



155-03279

- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V20-OB-A3-W-W-M2-L	632-91031	Connection cables	From Page A-46
Red	V20-OB-A3-R-W-M2-L	632-91034	Illumination	From Page A-33
Infrared	V20-OB-A3-I-W-M2-L	632-91037	Brackets	From Page A-4
White	V20C-OB-A3-W-W-M2-L	632-91041	Interface accessories	From Page A-53


VISOR® V20 Object Advanced, medium field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks

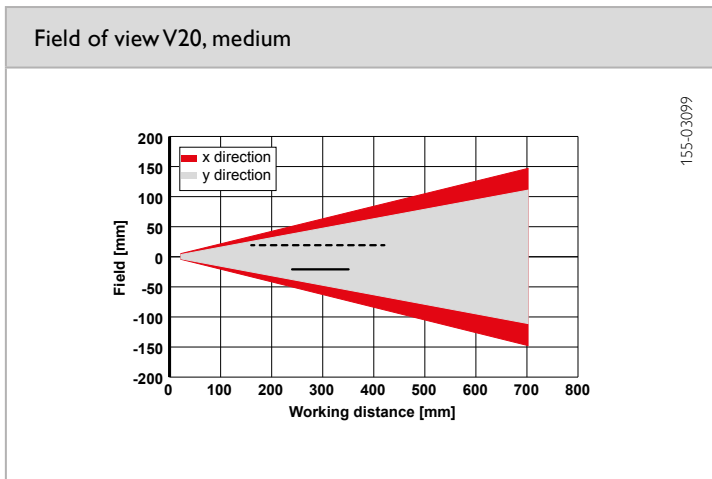
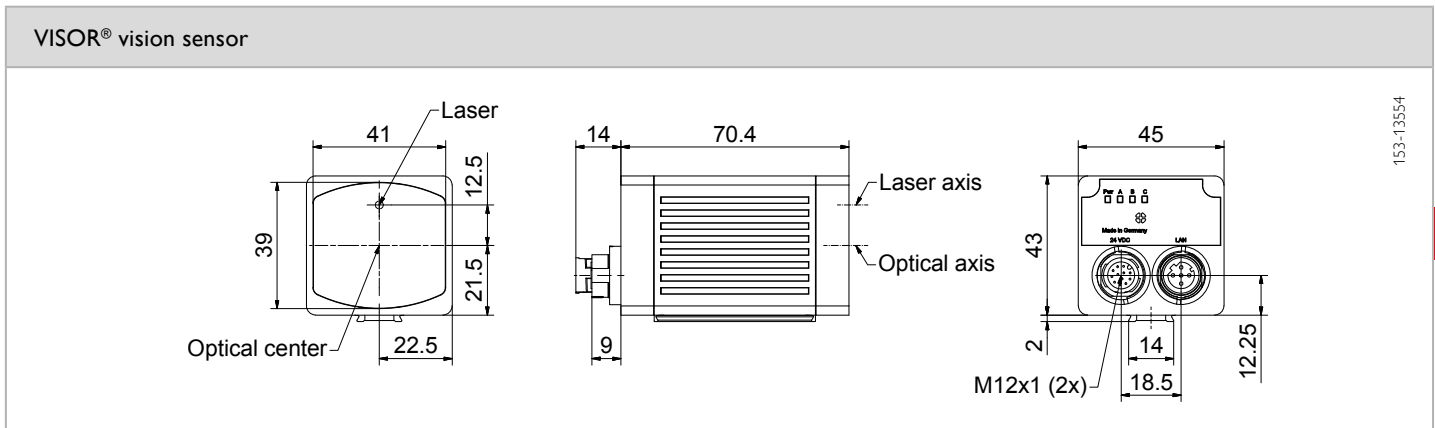


PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1,5 megapixel chip
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	1440 × 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	12 (medium)		
Pixel size	3.45 μm × 3.45 μm		
Focus	Motorized		
Adjustment range	25 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X × Y	10 × 8 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70,4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{SS} ⁴ 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

illumination	Part number	Article number	Accessories	
White	V20-OB-A3-W-M-M2-L	632-91032	Connection cables	From Page A-46
Red	V20-OB-A3-R-M-M2-L	632-91035	Illumination	From Page A-33
Infrared	V20-OB-A3-I-M-M2-L	632-91038	Brackets	From Page A-4
White	V20C-OB-A3-W-M-M2-L	632-91042	Interface accessories	From Page A-53


VISOR® V20 Object Advanced, narrow field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



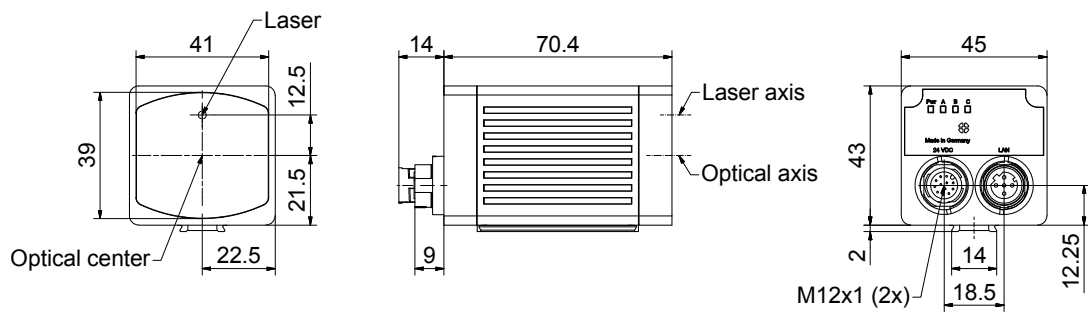
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1,5 megapixel chip
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	1440 × 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	3.45 μm × 3.45 μm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X × Y	18 × 14 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70,4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V / Low < 3 V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5 V_{SS} ⁴ 80 % air humidity, noncondensing

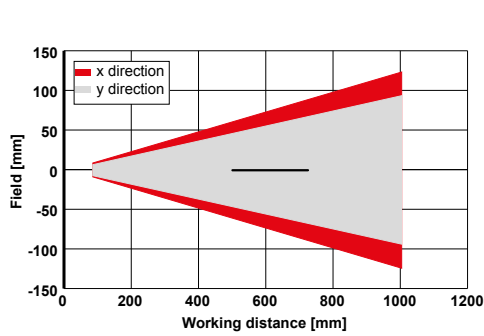
VISOR® vision sensor



153-13554

3

Field of view V20, narrow



155-03098

— Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V20-OB-A3-W-N-M2-L	632-91033	Connection cables	From Page A-46
Red	V20-OB-A3-R-N-M2-L	632-91036	Illumination	From Page A-33
Infrared	V20-OB-A3-I-N-M2-L	632-91039	Brackets	From Page A-4
White	V20C-OB-A3-W-N-M2-L	632-91043	Interface accessories	From Page A-53

VISOR® V20 Object Advanced, C-Mount

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



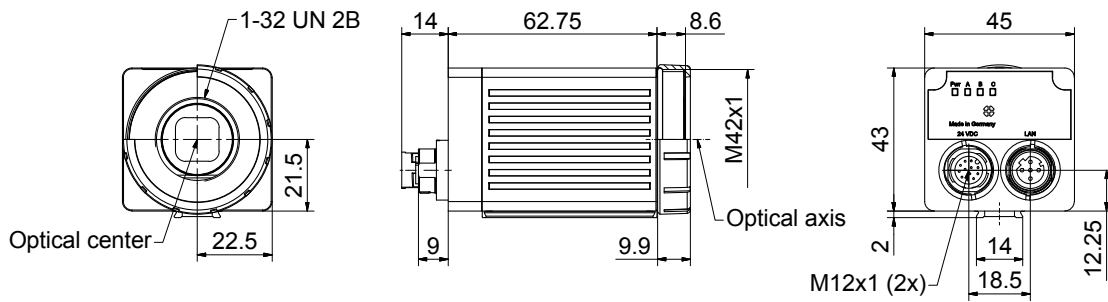
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Object detection with 1,5 megapixel chip
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	1440 x 1080 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/2.9", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value¹: output of color values; Color area¹: area inspection of colors, with selectable tolerance; Color list¹: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	C-mount		
Pixel size	3,45 µm x 3,45 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	No		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30V DC ²	Dimensions	70,4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 ³
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Color hardware ² max. ripple < 5V_{SS} ³ only with protective casing ⁴ 80 % air humidity, noncondensing

VISOR® vision sensor C-mount



153-13555

3

Lens	C-mount protective casing for VISOR®
	

Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V20-OB-A3-C-2	632-91040	Connection cables
V20C-OB-A3-C-2	632-91044	Illumination
		Lenses
		Brackets
		Interface accessories
		From Page A-46
		From Page A-33
		From Page A-28
		From Page A-4
		From Page A-53

VISOR® V10 Object Standard, wide field of view

Vision sensor for object detection, simple presence and completeness checks

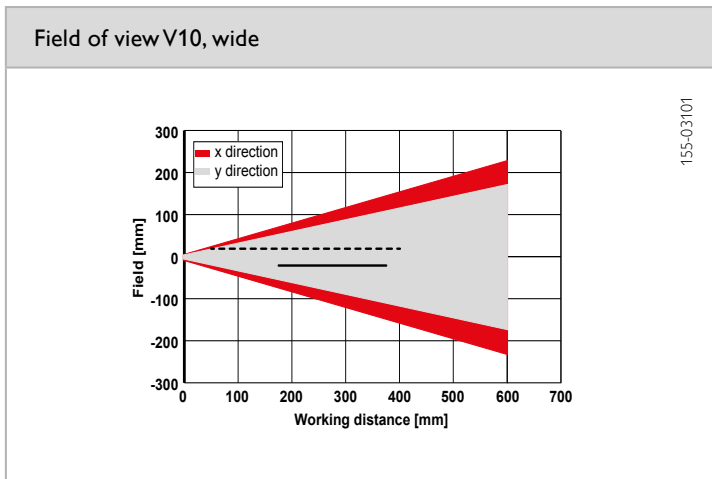
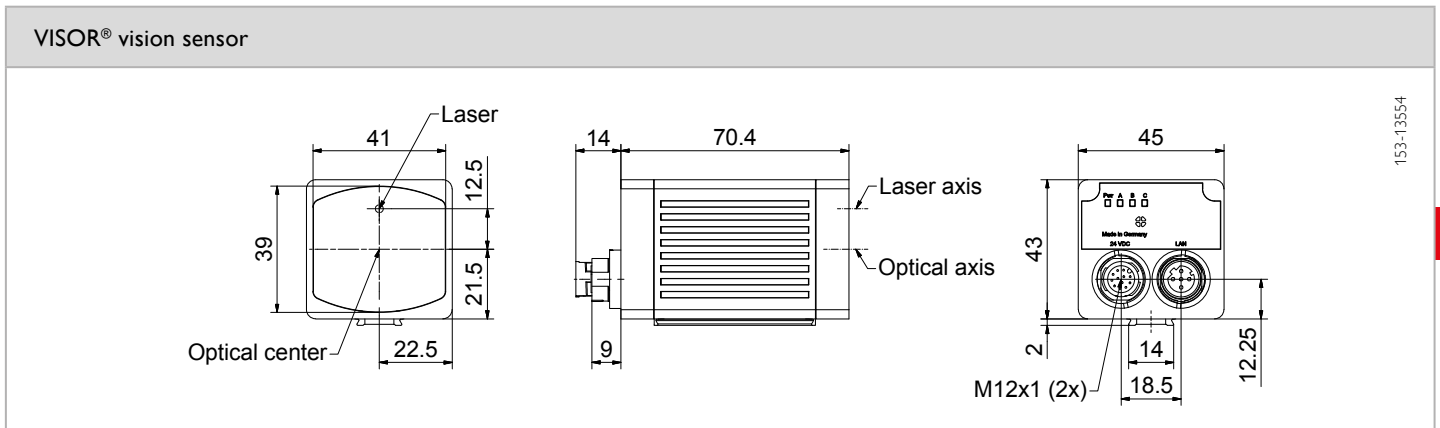


PRODUCT HIGHLIGHTS

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

Optical data		Functions	
Resolution	800 × 600 pixels	Number of jobs / detectors	8 / 32
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching , contour: teach-in and detection of patterns and contours; Calliper: distance between edges; Grey threshold, brightness: evaluation of brightness;
Integrated lens, focal length [mm]	5.2 (wide)		Contrast: evaluation of contrast;
Pixel size	4.8 µm × 4.8 µm		Color area²: area inspection of colors, with selectable tolerance
Focus	Motorized		
Adjustment range	0 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X × Y	2 × 1 mm		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70,4 × 45 × 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 4 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	No		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{SS} ⁴ 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-S3-W-W-M2	631-91043	Connection cables	From Page A-46
Red	V10-OB-S3-R-W-M2	631-91045	Illumination	From Page A-33
Infrared	V10-OB-S3-I-W-M2	631-91047	Brackets	From Page A-4
White	V10C-OB-S3-W-W-M2	631-91049	Interface accessories	From Page A-53

VISOR® V10 Object Standard, medium field of view

Vision sensor for object detection, simple presence and completeness checks

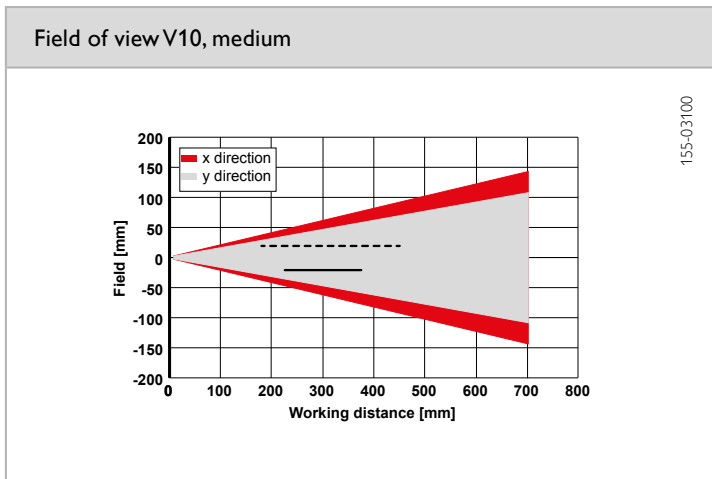
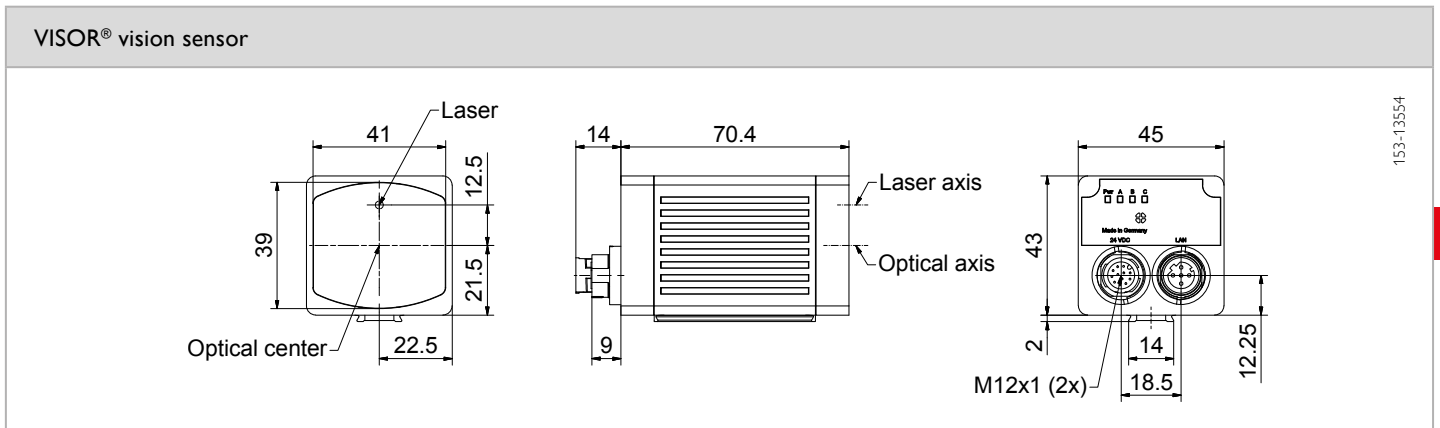


PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Efficient part detection and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	8 / 32
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; Grey threshold, brightness: evaluation of brightness;
Integrated lens, focal length [mm]	9.6 (medium)		Contrast: evaluation of contrast;
Pixel size	4.8 µm x 4.8 µm		Color area²: area inspection of colors, with selectable tolerance
Focus	Motorized		
Adjustment range	12 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	7 x 3 mm		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V / Low < 3 V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 4 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	No		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{SS} ⁴ 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-S3-W-M-M2	631-91044	Connection cables	From Page A-46
Red	V10-OB-S3-R-M-M2	631-91046	Illumination	From Page A-33
Infrared	V10-OB-S3-I-M-M2	631-91048	Brackets	From Page A-4
White	V10C-OB-S3-W-M-M2	631-91050	Interface accessories	From Page A-53

VISOR® V10 Object Standard, narrow field of view

Vision sensor for object detection, simple presence and completeness checks

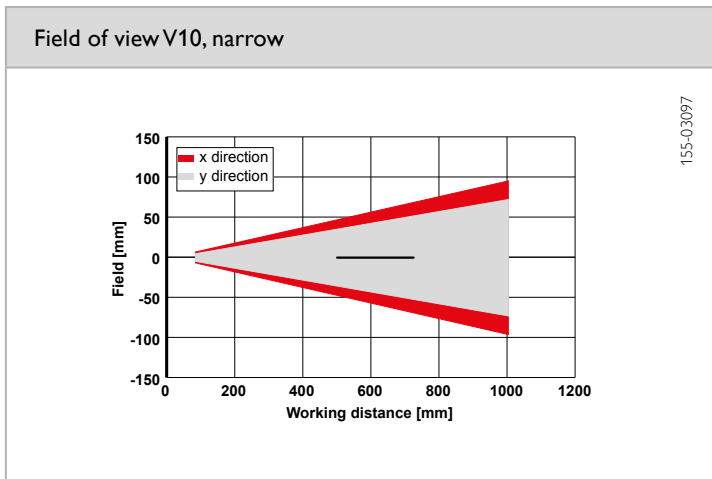
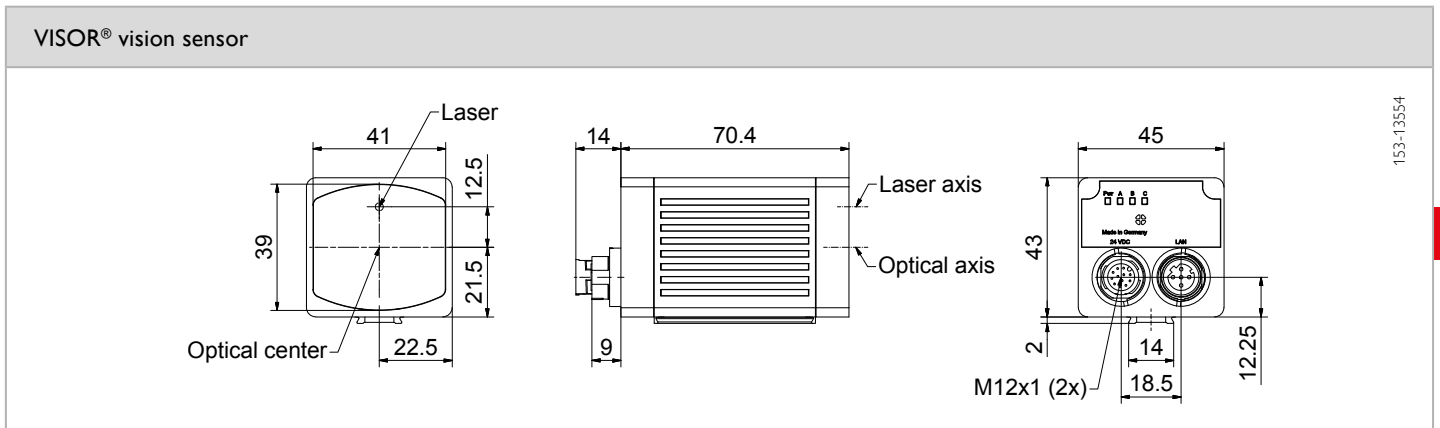


PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Efficient part detection and tracking
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	8 / 32
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; Grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color area²: area inspection of colors, with selectable tolerance
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	14 x 10 mm		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V / Low < 3 V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 4 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	No		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{SS} ⁴ 80 % air humidity, noncondensing



— Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-S3-W-N-M2	631-91116	Connection cables	From Page A-46
Red	V10-OB-S3-R-N-M2	631-91115	Illumination	From Page A-33
Infrared	V10-OB-S3-I-N-M2	631-91114	Brackets	From Page A-4
White	V10C-OB-S3-W-N-M2	631-91113	Interface accessories	From Page A-53

VISOR® V10 Object Advanced, wide field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



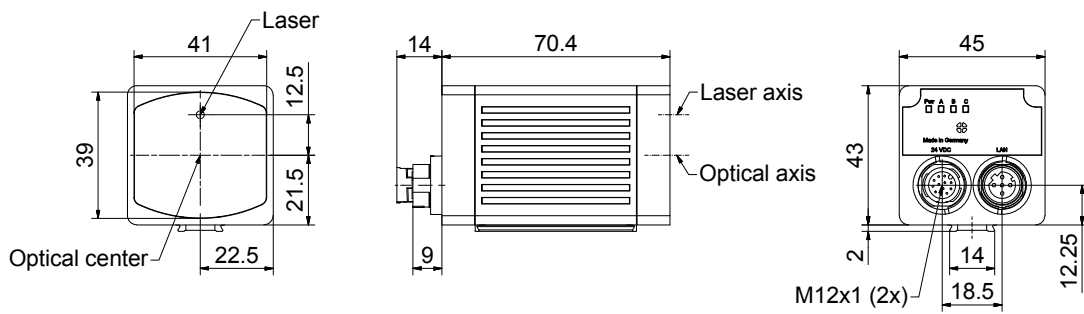
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking: X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	5.2 (wide)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	0 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	2 x 1 mm		
Target laser	Laser: red (635 nm) class 1 ⚠ (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70,4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5 V_{SS} ⁴ 80 % air humidity, noncondensing

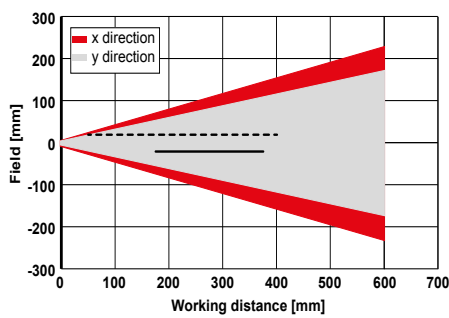
VISOR® vision sensor



153-13554

3

Field of view V10, wide



155-03101

- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-A3-W-W-M2-L	631-91014	Connection cables	From Page A-46
White	V10-OB-A3-W-WD-M2-L	631-91017	Illumination	From Page A-33
Red	V10-OB-A3-R-W-M2-L	631-91019	Brackets	From Page A-4
Red	V10-OB-A3-R-WD-M2-L	631-91022	Interface accessories	From Page A-53
Infrared	V10-OB-A3-I-W-M2-L	631-91024		
Infrared	V10-OB-A3-I-WD-M2-L	631-91027		
White	V10C-OB-A3-W-W-M2-L	631-91013		


VISOR® V10 Object Advanced, medium field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks

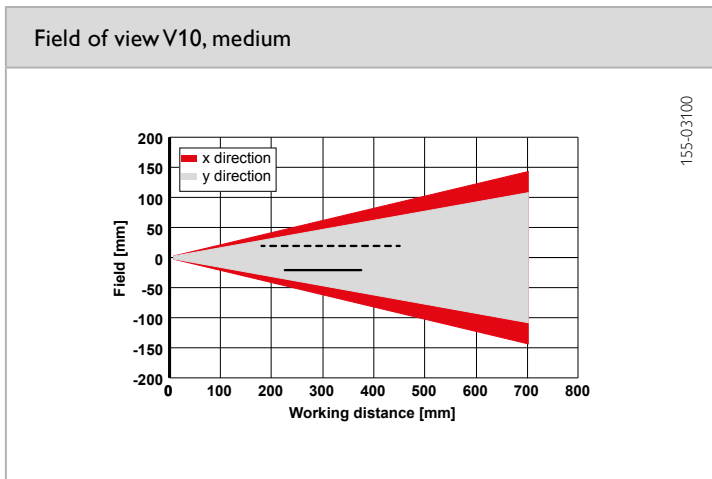
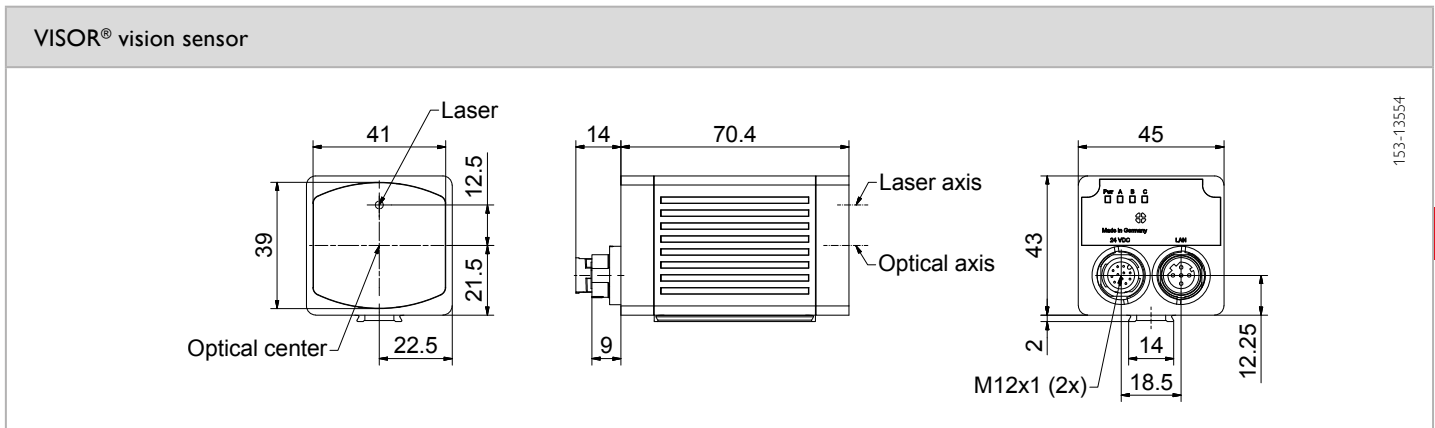


PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	9.6 (medium)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	12 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	7 x 3 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ³	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5V_{ss} ⁴ 80 % air humidity, noncondensing



- Increased depth of field
- Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-A3-W-M-M2-L	631-91015	Connection cables	From Page A-46
White	V10-OB-A3-W-MD-M2-L	631-91018	Illumination	From Page A-33
Red	V10-OB-A3-R-M-M2-L	631-91020	Brackets	From Page A-4
Red	V10-OB-A3-R-MD-M2-L	631-91023	Interface accessories	From Page A-53
Infrared	V10-OB-A3-I-M-M2-L	631-91025		
Infrared	V10-OB-A3-I-MD-M2-L	631-91012		
White	V10C-OB-A3-W-M-M2-L	631-91011		


VISOR® V10 Object Advanced, narrow field of view

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks

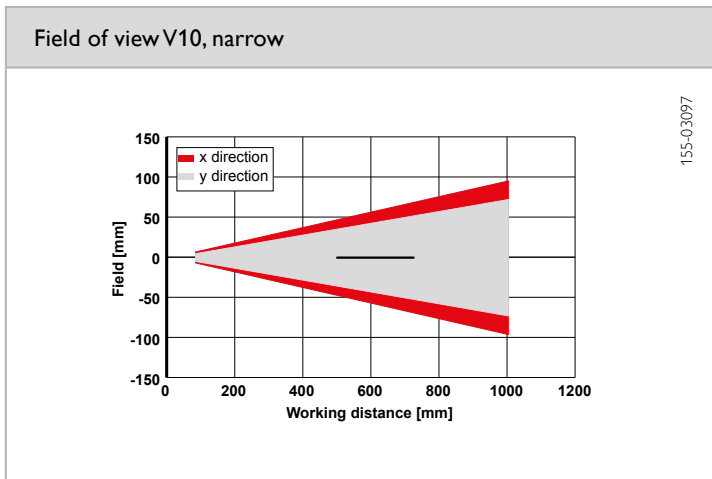
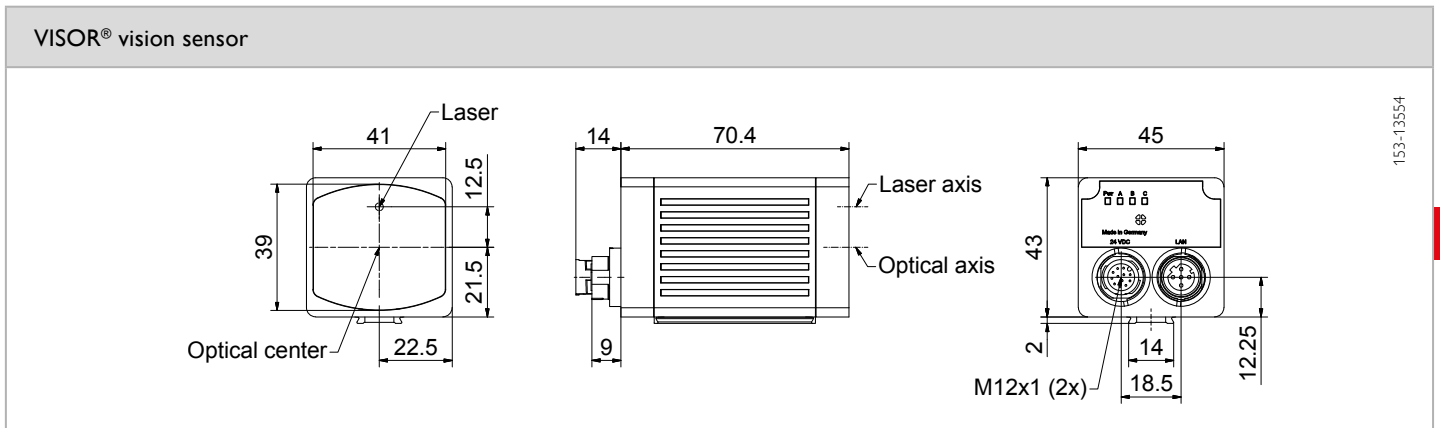


PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value²: output of color values; Color area²: area inspection of colors, with selectable tolerance; Color list²: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	20 (narrow)		
Pixel size	4.8 µm x 4.8 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) ¹ , infrared (850 nm) ¹ LEDs		
Minimum field of view, X x Y	14 x 10 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U _b	18 ... 30 DC ³	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U _b / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _b -1V / Low < 3V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Not color hardware ² color hardware ³ max. ripple < 5 V_{ss} ⁴ 80 % air humidity, noncondensing



— Normal depth of field

Illumination	Part number	Article number	Accessories	
White	V10-OB-A3-W-N-M2-L	631-91016	Connection cables	From Page A-46
Red	V10-OB-A3-R-N-M2-L	631-91021	Illumination	From Page A-33
Infrared	V10-OB-A3-I-N-M2-L	631-91026	Brackets	From Page A-4
White	V10C-OB-A3-W-N-M2-L	631-91002	Interface accessories	From Page A-53

VISOR® V10 Object Advanced, C-Mount

Vision sensor for object detection, presence check, completeness check, position inspection and measurement tasks



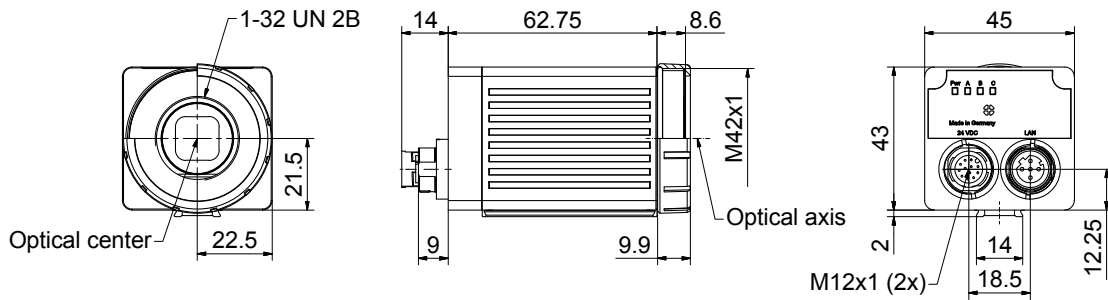
PRODUCT HIGHLIGHTS

- User-friendly configuration and viewer software with hierarchical user rights
- Detectors for object detection
- Real-world engineering units at a mouse click
- Precise position determination: X/Y-position and orientation
- Comprehensive logic and calculation functions for maximum flexibility
- Encoder input

Optical data		Functions	
Resolution	800 x 600 pixels	Number of jobs / detectors	max. 255 / max. 255
Imaging chip CMOS	1/3.6", monochrome / color	Detectors	Position tracking; X/Y and orientation; Pattern matching, contour: teach-in and detection of patterns and contours; Calliper: distance between edges; BLOB, Grey threshold, Brightness: evaluation of brightness; Contrast: evaluation of contrast; Color value¹: output of color values; Color area¹: area inspection of colors, with selectable tolerance; Color list¹: finding the most similar colors; Result processing: Math: checking and calculating with results from detectors
Integrated lens, focal length [mm]	C-mount		
Pixel size	4.8 µm x 4.8 µm		
Focus	Manual		
Adjustment range	Dependent on lens		
Integrated illumination	None		
Minimum field of view, X x Y	Dependent on lens		
Target laser	none		
Electrical data		Mechanical data	
Operating voltage, +U _B	18 ... 30 DC ²	Dimensions	70.4 x 45 x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 ³
Protective circuits	Reverse-polarity protection, U _B / short-circuit protection of all outputs	Material, housing	Aluminium, die-cast, RoHS compliant
Power On Delay	Approx. 13 s after Power on	Material, front screen	Plastic
Outputs	PNP/NPN (switchable)	Ambient temperature: operation	0 ... +50 °C ⁴
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C ⁴
Switching threshold inputs incl. encoder	PNP/NPN High > U _B -1 V / Low < 3 V	Weight	Approx. 200 g
Input resistance	> 20 kΩ	Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port	Vibration resistance	EN 60068-2-6
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs	Shock resistance	EN 60068-2-27
Encoder	✓		

¹ Color hardware ² Max. ripple < 5V_{SS} ³ only with protective casing ⁴ 80 % air humidity, noncondensing

VISOR® vision sensor



153-13555

3

Lens	C-mount protective casing for VISOR®
	

Part number	Article number
LPTVxx-G37.5	651-01006
LPTVxx-25.0	651-01007

	LOC-08-HD-30.5x0,5	LOC-12-HD-27x0,5	LOC-16-HD-27x0,5	LOC-25-HD-27x0,5	LOC-35-HD-27x0,5	LOC-50-HD-27x0,5	LOC-75-HD-34x0,5
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V10-OB-A3-C-2	631-91001	Connection cables
V10C-OB-A3-C-2	631-91042	Illumination
		Lenses
		Brackets
		Interface accessories
		From Page A-46
		From Page A-33
		From Page A-28
		From Page A-4
		From Page A-53