
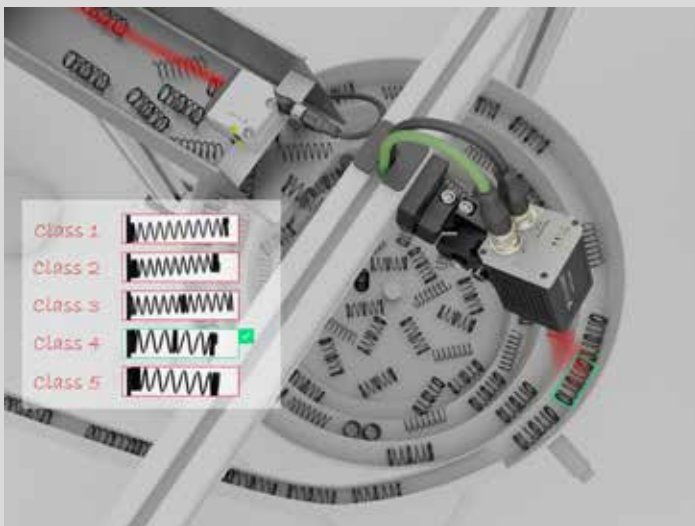


# VISOR® Object AI

Artificial intelligence. Real results.



 made in Germany



### Checking the right spring type

With the classification detector, even very similar looking springs are reliably distinguished and correctly fed to the machine.

### HIGHLIGHTS VISOR® OBJECT AI

- Easy setup without image processing knowledge
- AI technology in a robust vision sensor made for industrial automation
- Train the detector with a few images on your PC
- Reliable results even with strong varying processes and products

VISOR® Object AI makes machine vision easier than ever before. It has the full flexibility of VISOR® Object Advanced and offers additionally the "Classification (AI)" detector, which makes the classification of objects even easier and more robust.

For presence checks, objects can be evaluated as "pass"/"fail" or reliably classified into 200 classes, e.g. to ensure that the correct product is fed and processed in a machine.

The sensor is set up in just a few steps and requires no expert knowledge.

Thanks to integrated artificial intelligence (AI), the detector learns the distinguishing features based on a few sample images. Even process and product variations, such as varied products in lots, stains, strong reflections, flexible parts, etc. can easily be taught to the detector with just a few mouse clicks.

VISOR® Object – Product overview					
	Product variant	Resolution	Field of view	Integrated illumination	Page
V50-OAI-A3-xxx	Advanced	2560 x 1936 mono/color	Wide	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	97
V50-OAI-A3-xxx			Medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	99
V50x-OAI-A3-C-2			C-mount	None	101
V20x-OAI-A3-xxx	Advanced	1440 x 1080 mono/color	Wide	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	103
V20x-OAI-A3-xxx			Medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	105
V20x-OAI-A3-xxx			Narrow	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	107
V20x-OAI-A3-C-2			C-mount	None	109
V10x-OAI-A3-xxx	Advanced	800 x 600 mono/color	Wide	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	111
V10x-OAI-A3-xxx			Medium	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	113
V10x-OAI-A3-xxx			Narrow	White, red <sup>1</sup> or infrared <sup>1</sup> LEDs	115
V10x-OAI-A3-C-2			C-mount	None	117

<sup>1</sup> Only with monochrome version


# VISOR® V50 Object AI, Advanced, wide field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



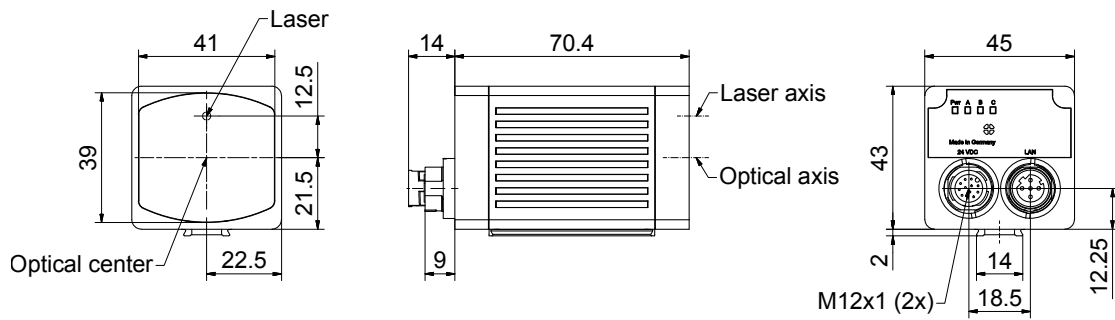
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks
- High resolution object detection with 5 megapixel chip

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>2</sup>:</b> output of color values; <b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>2</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
Integrated lens, focal length [mm]	9.6 (wide)		
Pixel size	2.8 µm x 2.8 µm		
Focus	Motorized		
Adjustment range	40 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	32 mm x 24 mm		
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V / 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	✓		

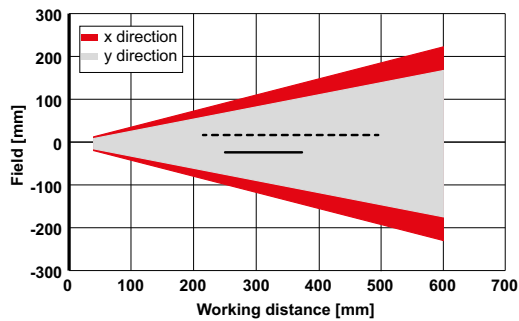
<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V50, wide



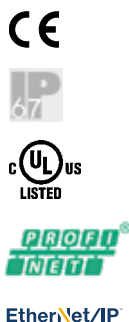
155-03626

----- Increased depth of field  
 \_\_\_\_\_ Normal depth of field

Illumination	Part number	Article number	Accessories
White	V50-OAI-A3-W-W-M2-L	635-91078	Connection cables Illumination Brackets Interface accessories <a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>
Red	V50-OAI-A3-R-W-M2-L	635-91080	
Infrared	V50-OAI-A3-I-W-M2-L	635-91082	
White	V50C-OAI-A3-W-W-M2-L	635-91085	
White	V50-OAI-A3-W-WD-M2-L	635-91088	
Red	V50-OAI-A3-R-WD-M2-L	635-91090	
Infrared	V50-OAI-A3-I-WD-M2-L	635-91092	

# VISOR® V50 Object AI, Advanced, medium field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up

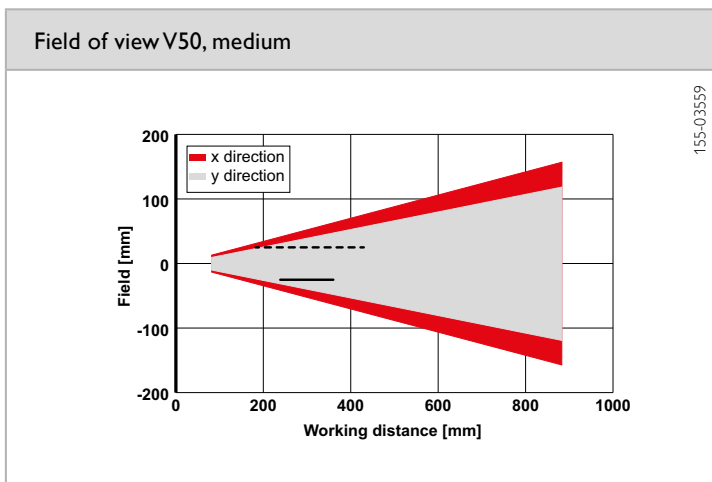
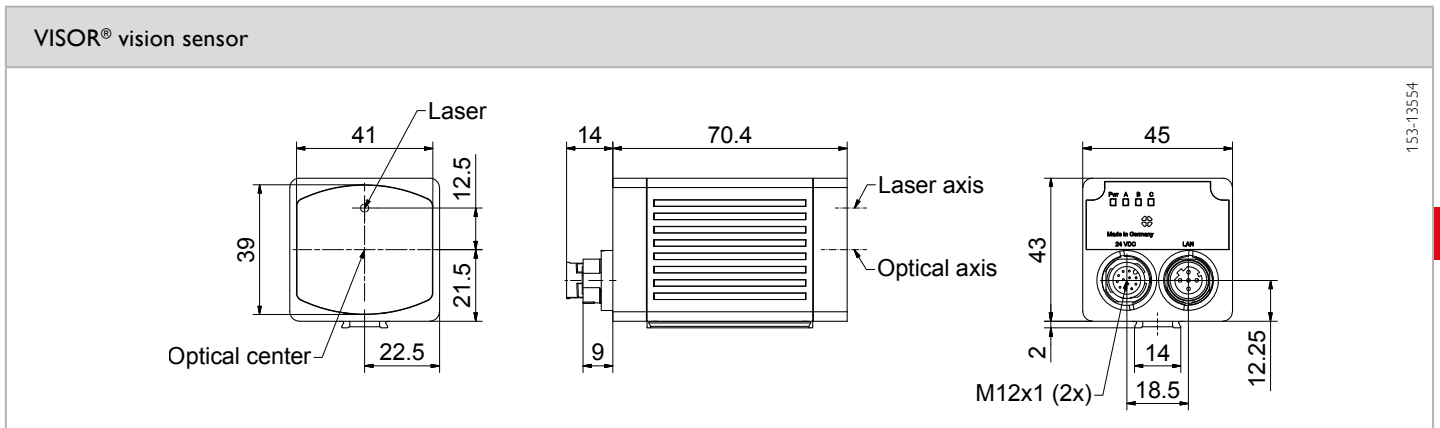


## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks
- High resolution object detection with 5 megapixel chip

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>2</sup>:</b> output of color values; <b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>2</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
Integrated lens, focal length [mm]	20 (medium)		
Pixel size	2.8 µm x 2.8 µm		
Focus	Motorized		
Adjustment range	100 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	32 mm x 24 mm		
Target laser	Laser: red (635 nm) class 1 ⚠ (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V / 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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing



----- Increased depth of field  
 ——— Normal depth of field

Illumination	Part number	Article number	Accessories
White	V50-OAI-A3-W-M-M2-L	635-91079	Connection cables Illumination Brackets Interface accessories <a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>
Red	V50-OAI-A3-R-M-M2-L	635-91081	
Infrared	V50-OAI-A3-I-M-M2-L	635-91083	
White	V50C-OAI-A3-W-M-M2-L	635-91086	
White	V50-OAI-A3-W-MD-M2-L	635-91089	
Red	V50-OAI-A3-R-MD-M2-L	635-91091	
Infrared	V50-OAI-A3-I-MD-M2-L	635-91093	

# VISOR® V50 Object AI, Advanced, C-mount

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



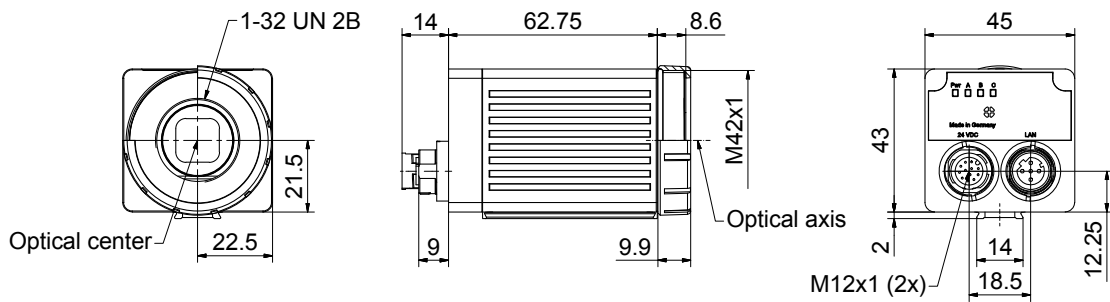
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks
- High resolution object detection with 5 megapixel chip

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>1</sup>:</b> output of color values; <b>Color area<sup>1</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>1</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
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 <sub>B</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Color hardware    <sup>2</sup> Max. ripple < 5V<sub>SS</sub>    <sup>3</sup> Only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

VISOR® vision sensor C-mount



153-13555

3



Part number	Article number
LPT Vxx-G37.5	651-01006
LPT Vxx-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
<b>Focal length</b>	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
<b>Article number</b>	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V50-OAI-A3-C-2	635-91084	Connection cables
V50C-OAI-A3-C-2	635-91087	Illumination
		Lenses
		Brackets
		Interface accessories

[www.sensopart.com/en/accessories](http://www.sensopart.com/en/accessories)




# VISOR® V20 Object AI, Advanced, wide field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up

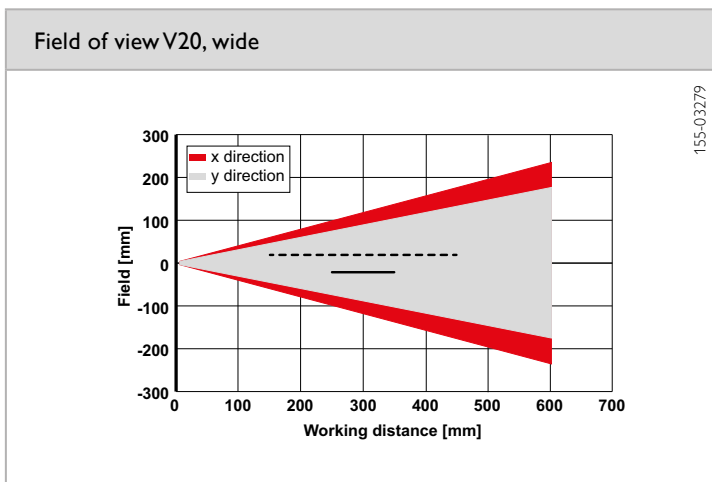
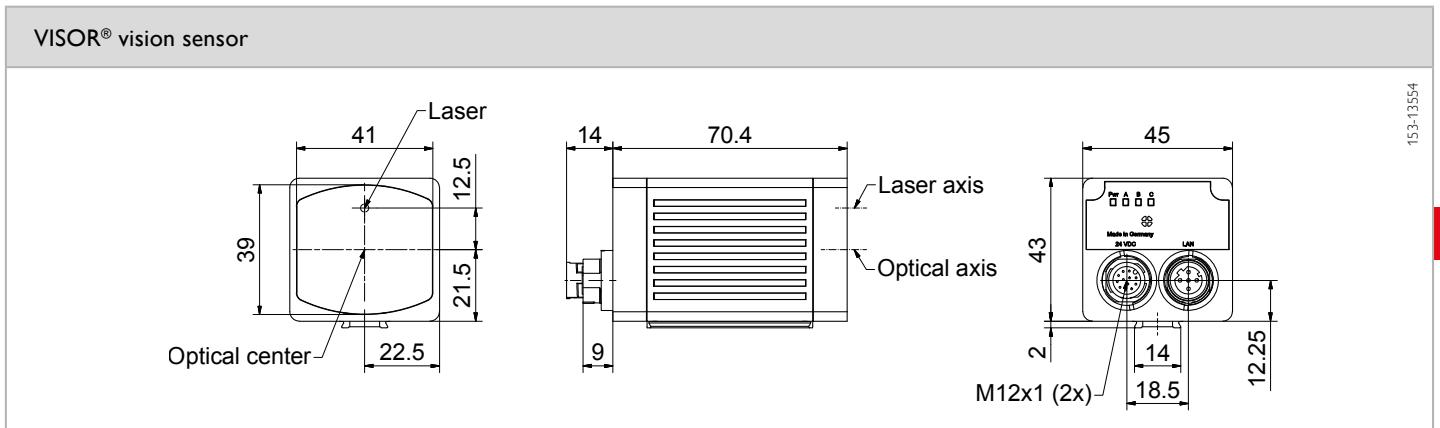


## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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;
Integrated lens, focal length [mm]	6.5 (wide)		<b>Pattern matching, contour:</b> teach-in and detection of patterns and contours;
Pixel size	3.45 µm x 3.45 µm		<b>Calliper:</b> distance between edges;
Focus	Motorized		<b>BLOB, grey threshold, brightness:</b> evaluation of brightness;
Adjustment range	10 mm to infinity		<b>Contrast:</b> evaluation of contrast;
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		<b>Color value</b> <sup>2</sup> : output of color values;
Minimum field of view, X x Y	6 mm x 4 mm		<b>Color area</b> <sup>2</sup> : area inspection of colors, with selectable tolerance;
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		<b>Color list</b> <sup>2</sup> : finding the most similar colors;
			<b>Result processing:</b>
			- <b>Math:</b> checking and calculating with results from detectors
		- <b>Classification (AI):</b> classification of objects with AI technology	
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30V DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing



----- Increased depth of field  
 ——— Normal depth of field

Illumination	Part number	Article number	Accessories
White	V20-OAI-A3-W-W-M2-L	632-91188	Connection cables
Red	V20-OAI-A3-R-W-M2-L	632-91191	Illumination
Infrared	V20-OAI-A3-I-W-M2-L	632-91193	Brackets
White	V20C-OAI-A3-W-W-M2-L	632-91197	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>

# VISOR® V20 Object AI, Advanced, medium field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



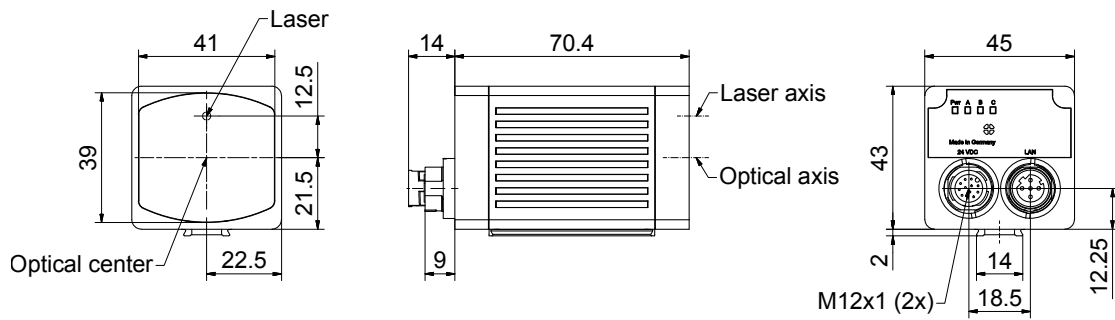
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>2</sup>:</b> output of color values; <b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>2</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
Integrated lens, focal length [mm]	12 (medium)		
Pixel size	3.45 µm x 3.45 µm		
Focus	Motorized		
Adjustment range	25 mm to infinity		
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	10 mm x 8 mm		
Target laser	Laser: red (635 nm) class 1 ⚠ (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V / 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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing

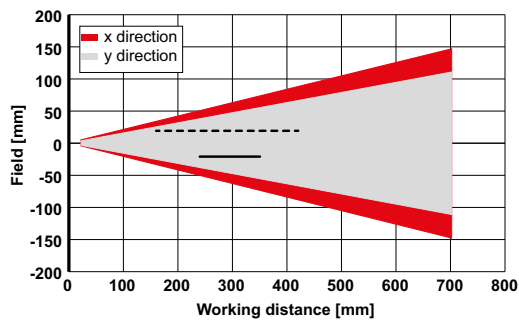
VISOR® vision sensor



153-13554

3

Field of view V20, medium



155-03099

----- Increased depth of field  
 \_\_\_\_\_ Normal depth of field

Illumination	Part number	Article number	Accessories
White	V20-OAI-A3-W-M-M2-L	632-91189	Connection cables
Red	V20-OAI-A3-R-M-M2-L	632-91187	Illumination
Infrared	V20-OAI-A3-I-M-M2-L	632-91194	Brackets
White	V20C-OAI-A3-W-M-M2-L	632-91198	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>


# VISOR® V20 Object AI, Advanced, narrow field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



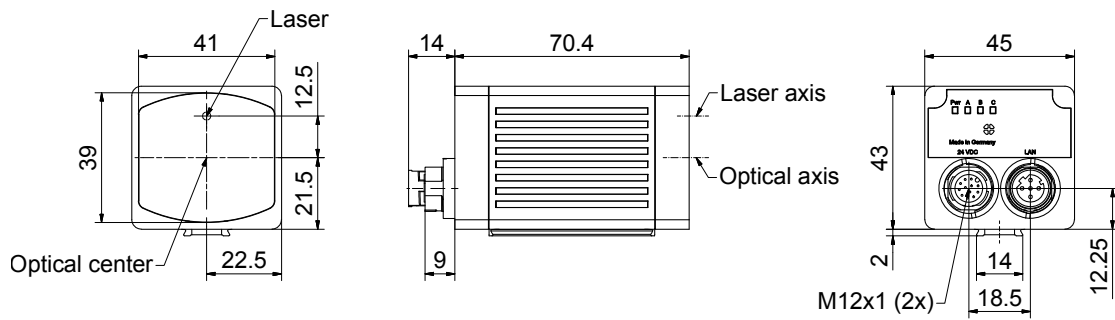
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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;
Integrated lens, focal length [mm]	20 (narrow)		<b>Pattern matching, contour:</b> teach-in and detection of patterns and contours;
Pixel size	3.45 µm x 3.45 µm		<b>Calliper:</b> distance between edges;
Focus	Motorized		<b>BLOB, grey threshold, brightness:</b> evaluation of brightness;
Adjustment range	100 mm to infinity		<b>Contrast:</b> evaluation of contrast;
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		<b>Color value<sup>2</sup>:</b> output of color values;
Minimum field of view, X x Y	18 mm x 14 mm		<b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance;
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		<b>Color list<sup>2</sup>:</b> finding the most similar colors;
			<b>Result processing:</b>
			- <b>Math:</b> checking and calculating with results from detectors
		- <b>Classification (AI):</b> classification of objects with AI technology	
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V / 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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing

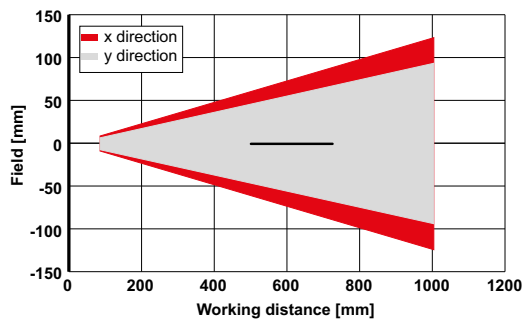
VISOR® vision sensor



153-13554

3

Field of view V20, narrow



155-03098

— Normal depth of field

illumination	Part number	Article number	Accessories
White	V20-OAI-A3-W-N-M2-L	632-91190	Connection cables
Red	V20-OAI-A3-R-N-M2-L	632-91192	Illumination
Infrared	V20-OAI-A3-I-N-M2-L	632-91195	Brackets
White	V20C-OAI-A3-W-N-M2-L	632-91199	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>

# VISOR® V20 Object AI, Advanced, C-mount

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



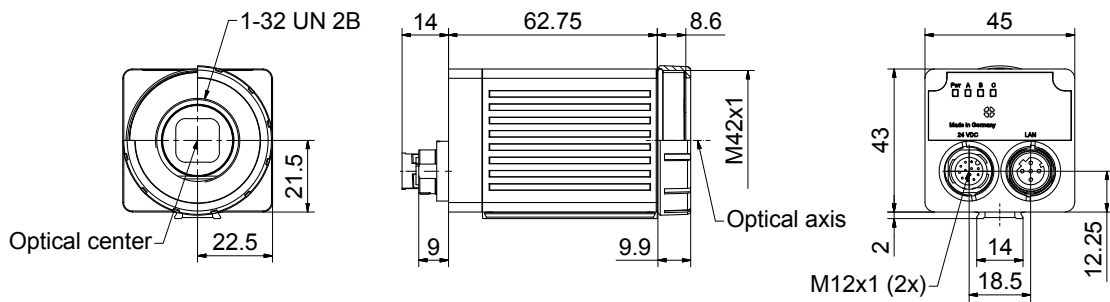
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>1</sup>:</b> output of color values; <b>Color area<sup>1</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>1</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
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 <sub>B</sub>	18 ... 30V DC <sup>2</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Color hardware    <sup>2</sup> Max. ripple < 5V<sub>SS</sub>    <sup>3</sup> Only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

VISOR® vision sensor C-mount



153-13555

3



Part number	Article number
LPT Vxx-G37.5	651-01006
LPT Vxx-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
<b>Focal length</b>	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
<b>Article number</b>	526-51535	526-51536	526-51537	526-51538	526-51539	526-51540	526-51541

Part number	Article number	Accessories
V20-OAI-A3-C-2	632-91196	Connection cables
V20C-OAI-A3-C-2	632-91200	Illumination
		Lenses
		Brackets
		Interface accessories
		<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>



# VISOR® V10 Object AI, Advanced, wide field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



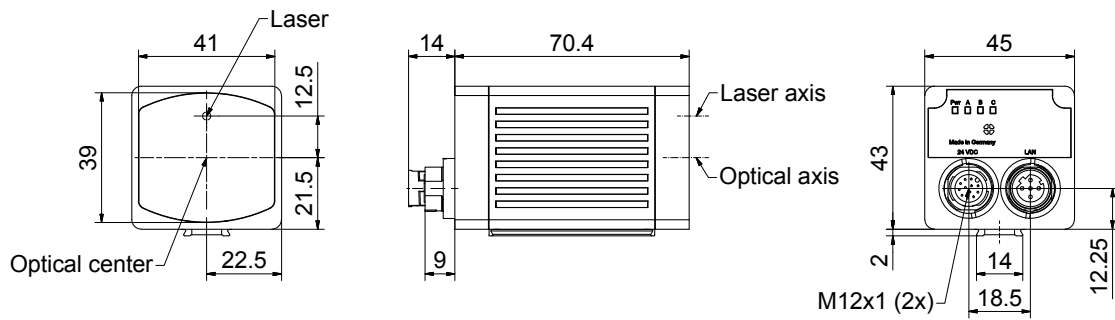
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>2</sup>:</b> output of color values; <b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>2</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
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) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	2 mm x 1 mm		
Target laser	Laser: red (635 nm) class 1 ⚠ (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>ss</sub>    <sup>4</sup> 80 % air humidity, noncondensing

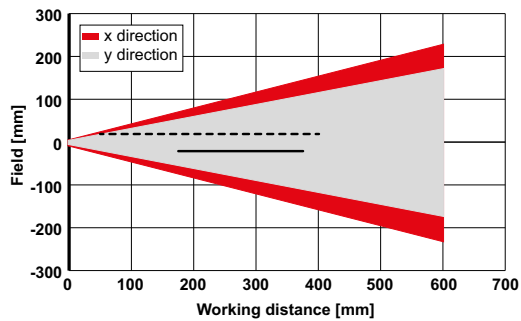
VISOR® vision sensor



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-OAI-A3-W-W-M2-L	631-91146	Connection cables
Red	V10-OAI-A3-R-W-M2-L	631-91149	Illumination
Infrared	V10-OAI-A3-I-W-M2-L	631-91151	Brackets
White	V10C-OAI-A3-W-W-M2-L	631-91155	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>


# VISOR® V10 Object AI, Advanced, medium field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



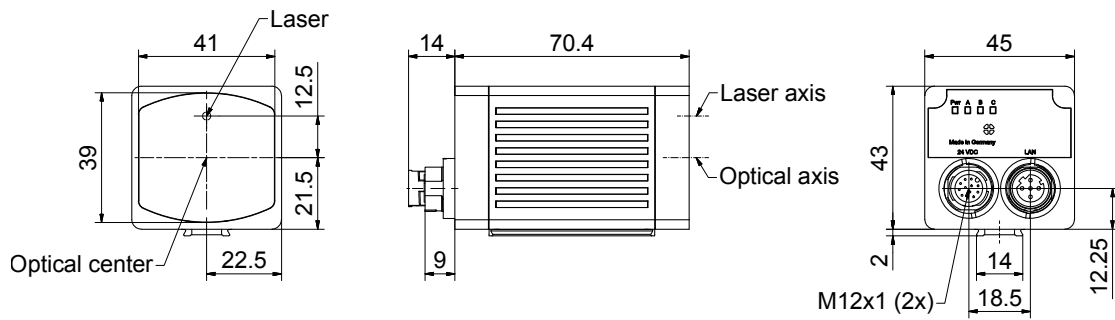
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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;
Integrated lens, focal length [mm]	9.6 (medium)		<b>Pattern matching, contour:</b> teach-in and detection of patterns and contours;
Pixel size	4.8 µm x 4.8 µm		<b>Calliper:</b> distance between edges;
Focus	Motorized		<b>BLOB, grey threshold, brightness:</b> evaluation of brightness;
Adjustment range	12 mm to infinity		<b>Contrast:</b> evaluation of contrast;
Integrated illumination	White (5000 K), red (635 nm) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		<b>Color value</b> <sup>2</sup> : output of color values;
Minimum field of view, X x Y	7 mm x 3 mm		<b>Color area</b> <sup>2</sup> : area inspection of colors, with selectable tolerance;
Target laser	Laser: red (635 nm) class 1  (IEC 60825-1)		<b>Color list</b> <sup>2</sup> : finding the most similar colors;
			<b>Result processing:</b>
			- <b>Math:</b> checking and calculating with results from detectors
		- <b>Classification (AI):</b> classification of objects with AI technology	
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing

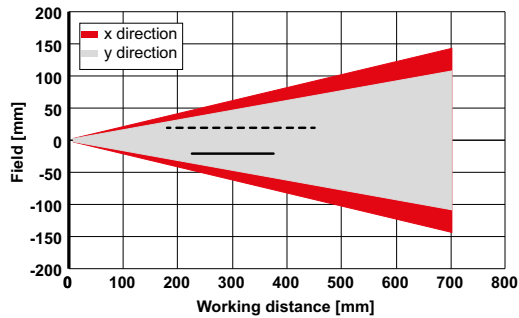
VISOR® vision sensor



153-13554

3

Field of view V10, medium



155-03100

----- Increased depth of field  
 ——— Normal depth of field

Illumination	Part number	Article number	Accessories
White	V10-OAI-A3-W-M-M2-L	631-91147	Connection cables
Red	V10-OAI-A3-R-M-M2-L	631-91145	Illumination
Infrared	V10-OAI-A3-I-M-M2-L	631-91152	Brackets
White	V10C-OAI-A3-W-M-M2-L	631-91156	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>

# VISOR® V10 Object AI, Advanced, narrow field of view

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



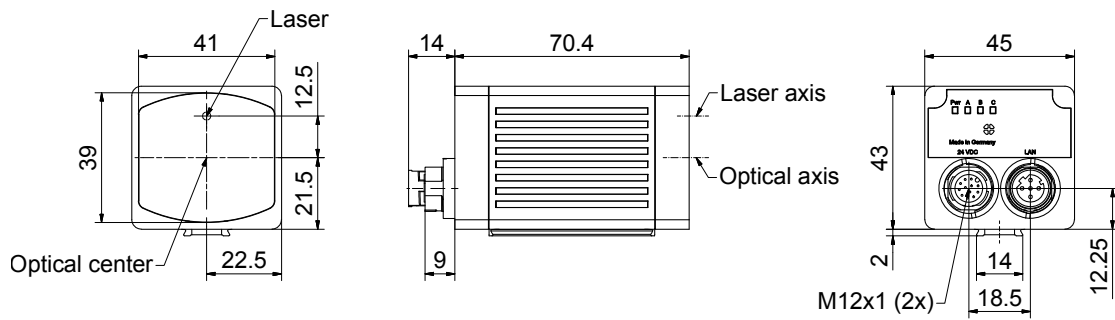
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>2</sup>:</b> output of color values; <b>Color area<sup>2</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>2</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
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) <sup>1</sup> , infrared (850 nm) <sup>1</sup> LEDs		
Minimum field of view, X x Y	14 mm x 10 mm		
Target laser	Laser: red (635 nm) class 1 ⚠ (IEC 60825-1)		
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	18 ... 30 DC <sup>3</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -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	✓		

<sup>1</sup> Not color hardware    <sup>2</sup> Color hardware    <sup>3</sup> Max. ripple < 5V<sub>SS</sub>    <sup>4</sup> 80 % air humidity, noncondensing

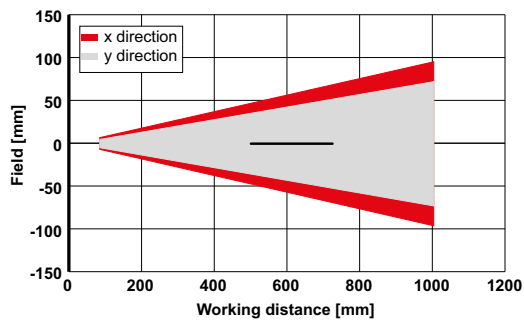
VISOR® vision sensor



153-13554

3

Field of view V10, narrow



155-03097

— Normal depth of field

Illumination	Part number	Article number	Accessories
White	V10-OAI-A3-W-N-M2-L	631-91148	Connection cables
Red	V10-OAI-A3-R-N-M2-L	631-91150	Illumination
Infrared	V10-OAI-A3-I-N-M2-L	631-91153	Brackets
White	V10C-OAI-A3-W-N-M2-L	631-91157	Interface accessories
			<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>

# VISOR® V10 Object AI, Advanced, C-mount

Vision sensor for object detection, presence and completeness checking, Position control and measurement tasks with robust AI technology for easy set-up



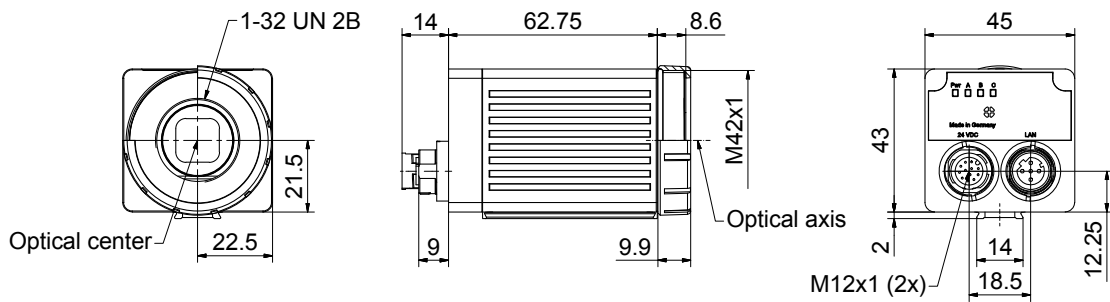
## PRODUCT HIGHLIGHTS

- All function of the VISOR® Object Advanced
- "Classification (AI)" detector for user-friendly, robust classification and inspection tasks

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; <b>Pattern matching, contour:</b> teach-in and detection of patterns and contours; <b>Calliper:</b> distance between edges; <b>BLOB, grey threshold, brightness:</b> evaluation of brightness; <b>Contrast:</b> evaluation of contrast; <b>Color value<sup>1</sup>:</b> output of color values; <b>Color area<sup>1</sup>:</b> area inspection of colors, with selectable tolerance; <b>Color list<sup>1</sup>:</b> finding the most similar colors; <b>Result processing:</b> - <b>Math:</b> checking and calculating with results from detectors - <b>Classification (AI):</b> classification of objects with AI technology
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 <sub>B</sub>	18 ... 30 DC <sup>2</sup>	Dimensions	70.4 mm x 45 mm x 45 mm (without plug)
Current consumption (without I/O)	≤ 300 mA	Enclosure rating	IP 67 & IP 65 <sup>3</sup>
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / 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 <sup>4</sup>
Max. output current (per output)	50 mA, 100 mA (pin 12)	Ambient temperature: storage	-20 ... +60 °C <sup>4</sup>
Switching threshold inputs incl. encoder	PNP/NPN High > U <sub>B</sub> -1 V / 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	✓		

<sup>1</sup> Color hardware    <sup>2</sup> Max. ripple < 5V<sub>SS</sub>    <sup>3</sup> Only with protective casing    <sup>4</sup> 80 % air humidity, noncondensing

VISOR® vision sensor C-mount



153-13555

3



Part number	Article number
LPT Vxx-G37.5	651-01006
LPT Vxx-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-OAI-A3-C-2	631-91154	Connection cables
V10C-OAI-A3-C-2	631-91158	Illumination
		Lenses
		Brackets
		Interface accessories
		<a href="http://www.sensopart.com/en/accessories">www.sensopart.com/en/accessories</a>