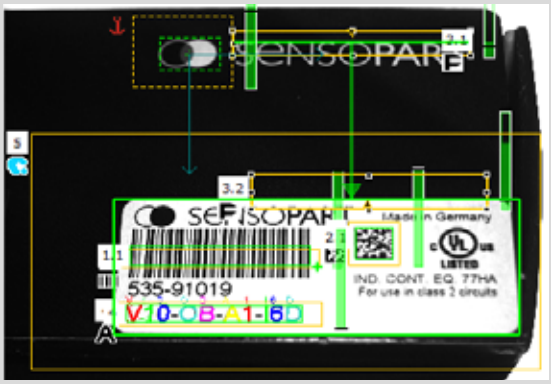
VISOR® Allround

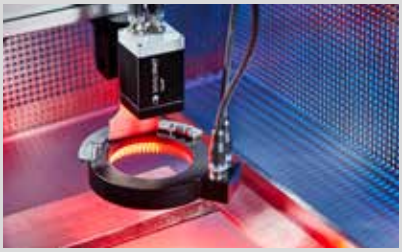
Advanced allround vision sensor for complex inspection tasks.



VISOR® Allround – Object detection in colour plus identification united in one device.
The VISOR® Allround is the latest member in the VISOR family and a real multi-talent among vision sensors. In the new allround version, the device unites the functions of the object sensor (i.e. calibration, pattern matching, contour, calliper, BLOB) with the powerful tools of the code reader (bar code, datamatrix and optical character recognition).

HIGHLIGHTS OF VISOR® ALLROUND

- All evaluations ("Detectors") of VISOR® Object and VISOR® Code Reader united in one device
- Highly accurate evaluation via 1.5 megapixel chip
- Powerful color detection of version with color chip
- EtherNet/IP PROFINET (conformance class B), EtherNet (TCP/IP) supported
- Multishot function reveals minimal height differences and suppresses printed markings
- Calibration function for measurement tasks and robotics applications



The one with a BLOB:
With the new 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.

VISOR® Allround – Object detection in colour plus identification united in one device.

The VISOR® Allround is the latest member in the VISOR® family and a real multi-talent among vision sensors. In the new allround version, the device unites the functions of the object sensor (i.a. calibration, pattern matching, contour, calliper, BLOB) with the powerful tools of the code reader (bar code, datamatrix and optical character recognition). When feeding parts in correct alignment or positioning components, additional data matrix codes for example can now also be read. With a resolution of up to 1,5 megapixel even the smallest details are reliably detected and evaluated.

In addition to the monochrome version, the VISOR® Allround is also available as a colour version with up to 1,5 megapixel. Thus additional "Detectors" are available for colour evaluation. Even the subtlest nuances in shade can be reliably detected. The relevant object colours, for example, can be taught-in quite simply by push of a button or - thanks to the intuitive colour histogram - set graphically for each channel in the colour space. The authorised colour tolerances can be defined by the user.

VISOR® Allround – Product Overview					
	Product variant	Resolution	Focal Length	Integrated illumination	Page
V20x-ALL-A3-xxx	Advanced	1440 x 1080 mono/color	Wide	White, red[1] or infrared[1] LEDs	44
V20x-ALL-A3-xxx			Medium	White, red[1] or infrared[1] LEDs	46
V20x-ALL-A3-xxx			Narrow	White, red[1] or infrared[1] LEDs	48
V20x-ALL-A3-C-2			C-Mount	None	50
V20x-ALL-P3-xxx	Professional	1440 x 1080 mono/color	Wide	White, red[1] or infrared[1] LEDs	52
V20x-ALL-P3-xxx			Medium	White, red[1] or infrared[1] LEDs	54
V20x-ALL-P3-xxx			Narrow	White, red[1] or infrared[1] LEDs	56
V20x-ALL-P3-C-2			C-Mount	None	58
V10x-ALL-A3-xxx	Advanced	800 x 600 mono/color	Wide	White, red[1] or infrared[1] LEDs	60
V10x-ALL-A3-xxx			Medium	White, red[1] or infrared[1] LEDs	62
V10x-ALL-A3-xxx			Narrow	White, red[1] or infrared[1] LEDs	64
V10x-ALL-A3-C-2			C-Mount	None	66

[1] only with monochrome version

VISOR® V20 Allround Advanced, wide field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- Detection of differences in height in the pseudo height image with multishot technology

Optical data	
Resolution	1440 x 1080 pixels
Imaging chip CMOS	1/2.9‘‘‘, monochrome / color
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)

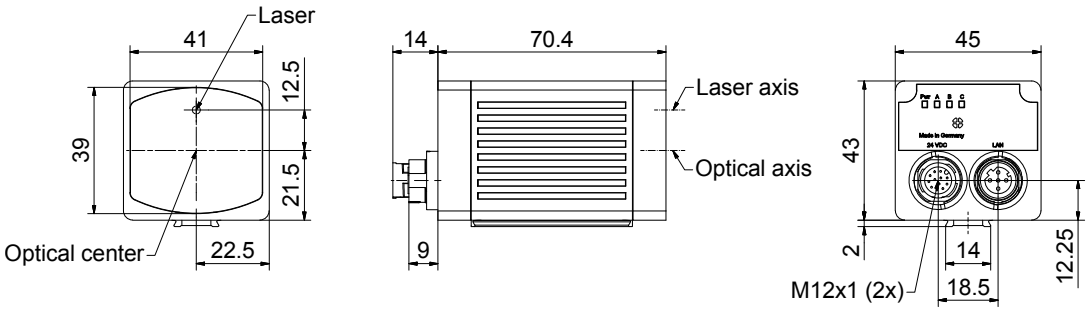
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value[2]:** output of color values; **Color area[2]:** area inspection of colors, with selectable tolerance; **Color list[2]**: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:**reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 V DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

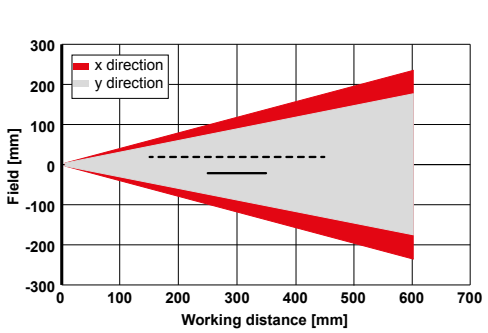
Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



Field of view V20, wide



Increased depth of field
Normal depth of field

Illumination, Multishot

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-A3-W-W-M2-L	632-91026	Connection cables	From Page A-46
Red	V20-ALL-A3-R-W-M2-L	632-91023	Illumination	From Page A-33
Infrared	V20-ALL-A3-I-W-M2-L	632-91020	Brackets	From Page A-4
White	V20C-ALL-A3-W-W-M2-L	632-91030	Interface accessories	From Page A-53

VISOR® V20 Allround Advanced, medium field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- Detection of differences in height in the pseudo height image with multishot technology

Optical data	
Resolution	1440 x 1080 Pixel
Imaging chip CMOS	1/2.9", monochrome / color
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)[1], infrared (850 nm)[1] LEDs
Minimum field of view, X x Y	10 x 8 mm
Target laser	Laser: red (635 nm) class 1 (IEC 60825-1)

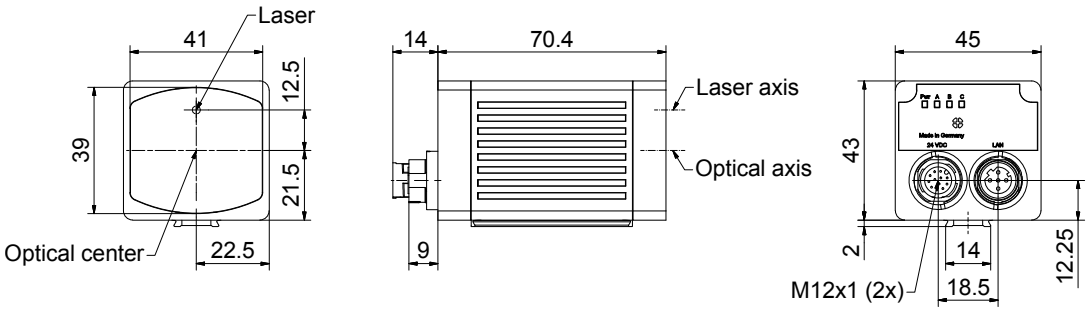
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **contrast:** evaluation of contrast; **Color value[2]:** output of color values; **Color field [2]:** area inspection of colors, with selectable tolerance; Color list[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

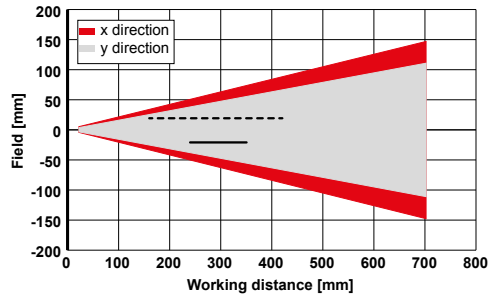
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V20, medium



155-03099

Increased depth of field

Normal depth of field

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-A3-W-M-M2-L	632-91024	Connection cables	From Page A-46
Red	V20-ALL-A3-R-M-M2-L	632-91021	Illumination	From Page A-33
Infrared	V20-ALL-A3-I-M-M2-L	632-91018	Brackets	From Page A-4
White	V20C-ALL-A3-W-M-M2-L	632-91028	Interface accessories	From Page A-53

VISOR® V20 Allround Advanced, narrow field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- Detection of differences in height in the pseudo height image with multishot technology

Optical data	
Resolution	1440 x 1080 Pixel
Imaging chip CMOS	1/2.9", monochrome / color
Integrated lens, focal length [mm]	20 (narrow)
Pixel size	3.45 µm x 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 x Y	18 x 14 mm
Target laser	Laser: red (635 nm) class 1 (IEC 60825-1)

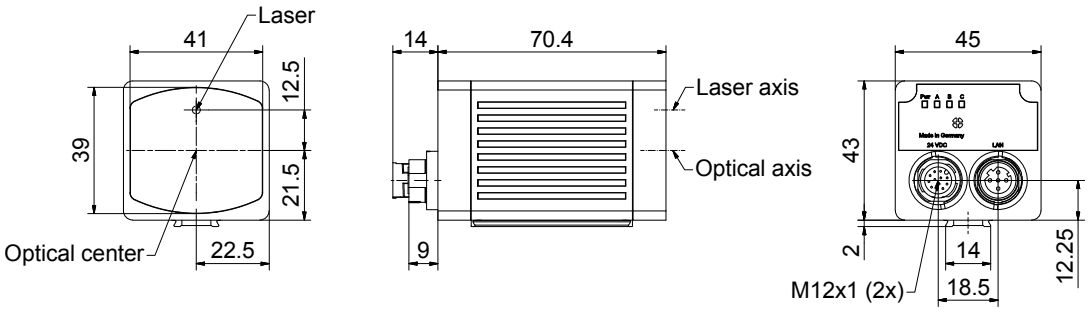
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color field** [2]**:** area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

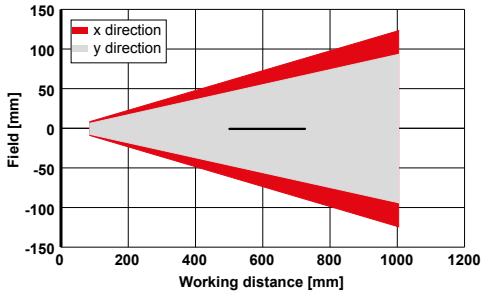
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V20, narrow



155-03098

——— Normal depth of field

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-A3-W-N-M2-L	632-91025	Connection cables	From Page A-46
Red	V20-ALL-A3-R-N-M2-L	632-91022	Illumination	From Page A-33
Infrared	V20-ALL-A3-I-N-M2-L	632-91019	Brackets	From Page A-4
White	V20C-ALL-A3-W-N-M2-L	632-91029	Interface accessories	From Page A-53

VISOR® V20 Allround Advanced, C-Mount

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- Detection of differences in height in the pseudo height image with multishot technology

Optical data	
Resolution	1440 x 1080 pixels
Imaging chip CMOS	1/2.9", monochrome / color
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

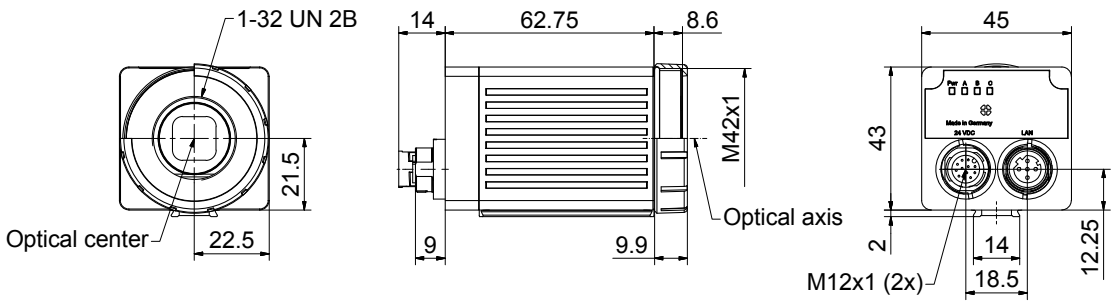
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[1]: output of color values; **Color area**[1]**:** area inspection of colors, with selectable tolerance; **Color list**[1]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 V DC[2]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70,4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65[3]
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Versorgung und I/O M12, 12-polig, Ethernet M12, 4-polig,
Vibrationsfestigkeit	EN 60068-2-6
Schockfestigkeit	EN 60068-2-27

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

Vision-Sensor VISOR® C-mount



153-13555

Lens	Illumination
	

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

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

Part number	Article number	Accessories	
V20-ALL-A3-C-2	632-91017	Connection cables	From Page A-46
V20C-ALL-A3-C-2	632-91027	Illumination	From Page A-33
		Lenses	From Page A-28
		Brackets	From Page A-4
		Interface accessories	From Page A-53

VISOR® V20 Allround Professional, wide field of view

Combines VISOR® Object Color, Code Reader and Robotic

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	1440 x 1080 Pixel
Imaging chip CMOS	1/2.9", monochrome / color
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)

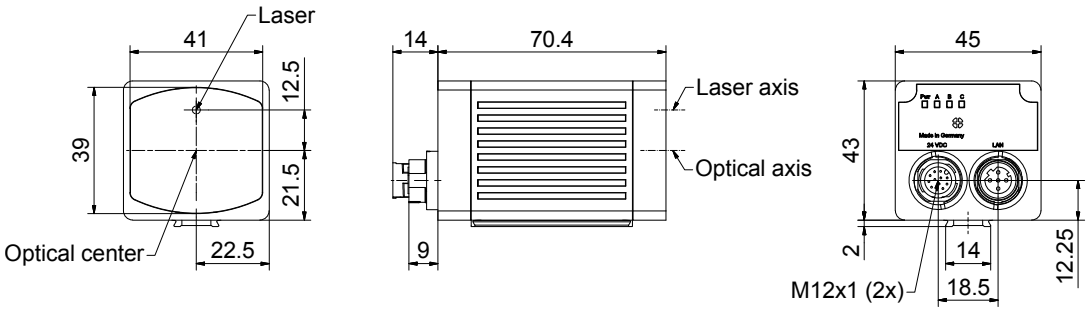
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color field** [2]**:** area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

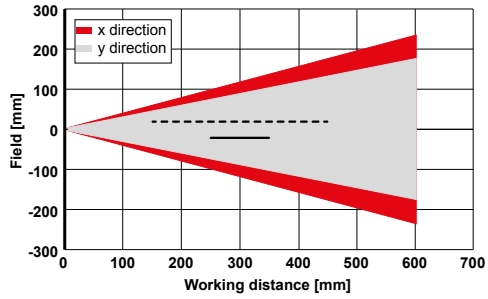
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V20, wide



155-03279

Increased depth of field

Normal depth of field

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-P3-W-W-M2-L	632-91012	Connection cables	From Page A-46
Red	V20-ALL-P3-R-W-M2-L	632-91010	Illumination	From Page A-33
Infrared	V20-ALL-P3-I-W-M2-L	632-91007	Brackets	From Page A-4
White	V20C-ALL-P3-W-W-M2-L	632-91016	Interface accessories	From Page A-53

VISOR® V20 Allround Professional, medium field of view

Combines VISOR® Object Color, Code Reader and Robotic

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	1440 x 1080 Pixel
Imaging chip CMOS	1/2.9", monochrome / color
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)[1], infrared (850 nm)[1] LEDs
Minimum field of view, X x Y	10 x 8 mm
Target laser	Laser: red (635 nm) class 1 (IEC 60825-1)

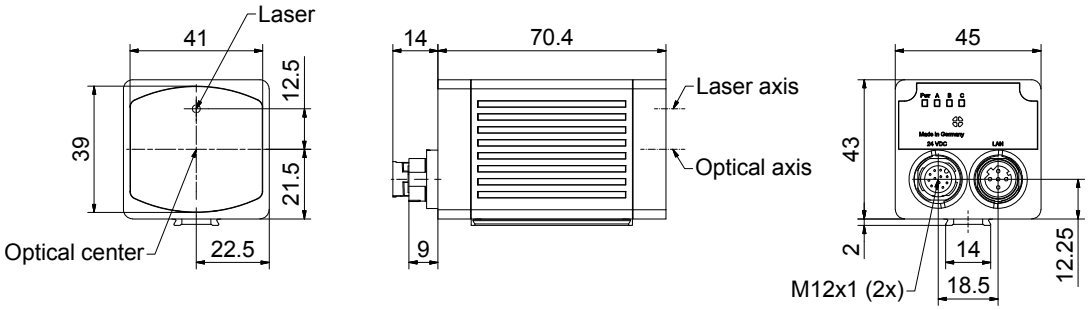
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color field** [2]**:** area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP / NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

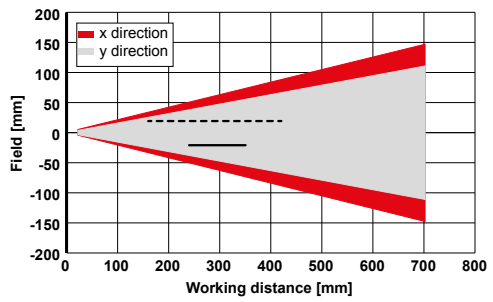
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V20, medium



155-03099

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

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-P3-W-M-M2-L	632-91000	Connection cables	From Page A-46
Red	V20-ALL-P3-R-M-M2-L	632-91008	Illumination	From Page A-33
Infrared	V20-ALL-P3-I-M-M2-L	632-91005	Brackets	From Page A-4
White	V20C-ALL-P3-W-M-M2-L	632-91014	Interface accessories	From Page A-53

VISOR® V20 Allround Professional, narrow field of view

Combines VISOR® Object Color, Code Reader and Robotic

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	1440 x 1080 pixels
Imaging chip CMOS	1/2.9‘‘‘, monochrome / color
Integrated lens, focal length [mm]	20 (narrow)
Pixel size	3.45 µm x 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 x Y	18 x 14 mm
Target laser	Laser: red (635 nm) class 1 (IEC 60825-1)

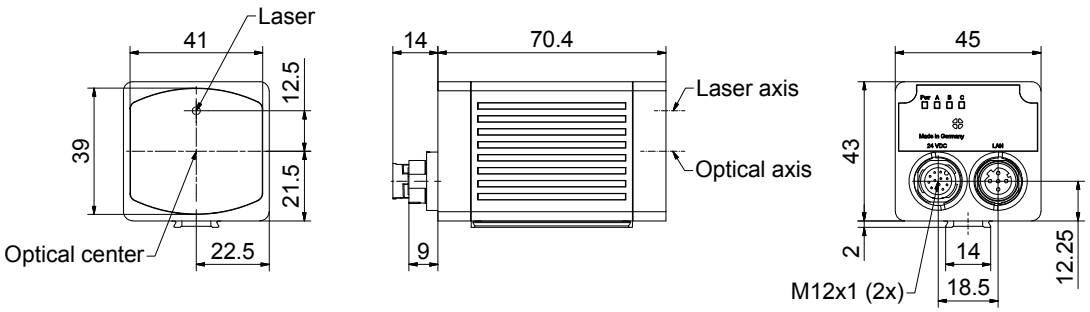
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color area**[2]: area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 V DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

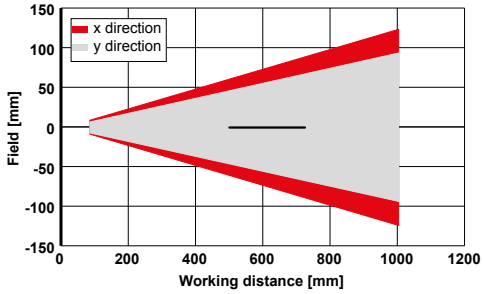
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V20, narrow



155-03098

——— Normal depth of field

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V20-ALL-P3-W-N-M2-L	632-91011	Connection cables	From Page A-46
Red	V20-ALL-P3-R-N-M2-L	632-91009	Illumination	From Page A-33
Infrared	V20-ALL-P3-I-N-M2-L	632-91006	Brackets	From Page A-4
White	V20C-ALL-P3-W-N-M2-L	632-91015	Interface accessories	From Page A-53

VISOR® V20 Allround Professional, C-Mount

Combines VISOR® Object Color, Code Reader and Robotic

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1,5 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	1440 x 1080 pixels
Imaging chip CMOS	1/2.9", monochrome / color
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

Functions	
Number of jobs / detectors	max. 255 / max. 255
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 value**[1]: output of color values; **Color area**[1]**:** area inspection of colors, with selectable tolerance; **Color list**[1]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

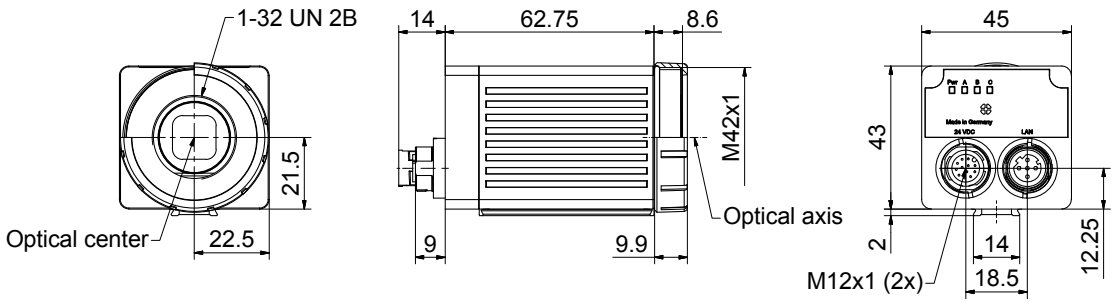
Electrical data	
Operating voltage, $+U_B$	18 … 30 V DC[2]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> en fonction de l'objectif
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70,4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65[3]
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Versorgung und I/O M12, 12-polig, Ethernet M12, 4-polig,
Vibrationsfestigkeit	EN 60068-2-6
Schockfestigkeit	EN 60068-2-27

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



153-13555

3

Lens	Illumination
	

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

	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

Part number	Article number	Accessories	
V20-ALL-P3-C-2	632-91004	Connection cables	From Page A-46
V20C-ALL-P3-C-2	632-91013	Illumination	From Page A-33
		Lenses	From Page A-28
		Brackets	From Page A-4
		Interface accessories	From Page A-53

VISOR® V10 Allround Advanced, wide field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Efficient part detection and tracking
- Real-world engineering units at a mouse click
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	800 x 600 Pixel
Imaging chip CMOS	1/3.6", monochrome / color
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)

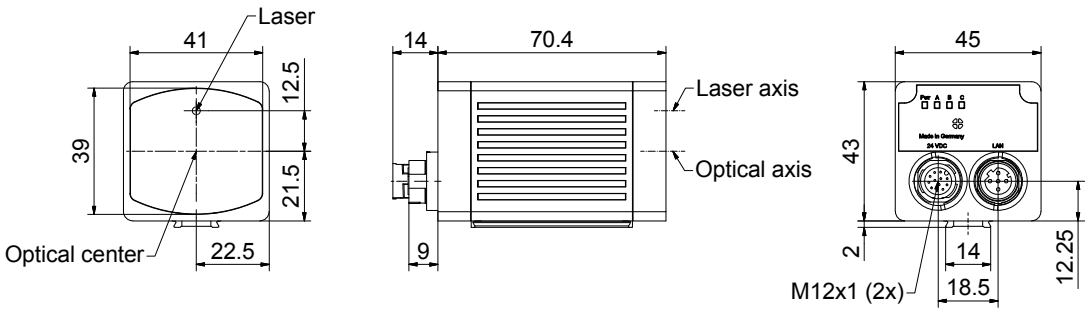
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color area**[2]**:** area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

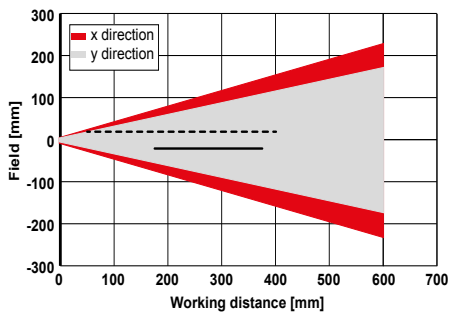
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V10, wide



155-03101

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

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V10-ALL-A3-W-W-M2-L	631-91004	Connection cables	From Page A-46
Red	V10-ALL-A3-R-W-M2-L	631-91007	Illumination	From Page A-33
Infrared	V10-ALL-A3-I-W-M2-L	631-91010	Brackets	From Page A-4
White	V10C-ALL-A3-W-W-M2-L	631-91041	Interface accessories	From Page A-53

VISOR® V10 Allround Advanced, medium field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Efficient part detection and tracking
- Real-world engineering units at a mouse click
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	800 x 600 Pixel
Imaging chip CMOS	1/3.6", monochrome / color
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)

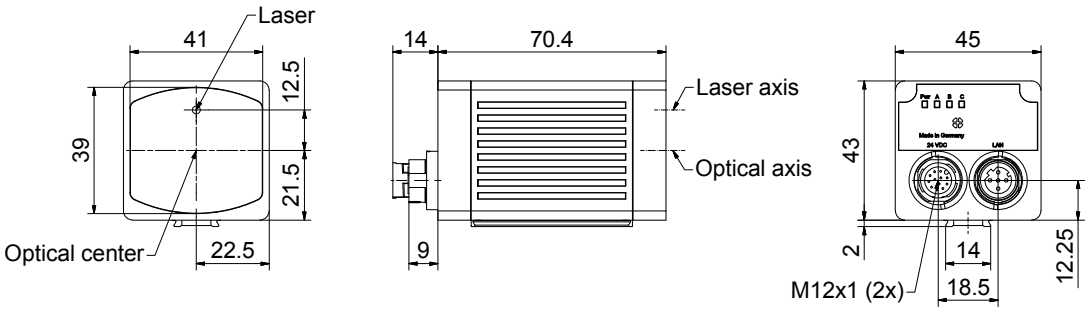
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color area**[2]: area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

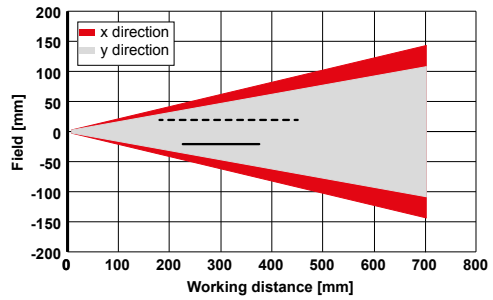
[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [4] 80 % air humidity, noncondensing

VISOR® vision sensor



153-13554

Field of view V10, medium



155-03100

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

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V10-ALL-A3-W-M-M2-L	631-91005	Connection cables	From Page A-46
Red	V10-ALL-A3-R-M-M2-L	631-91008	Illumination	From Page A-33
Infrared	V10-ALL-A3-I-M-M2-L	631-91029	Brackets	From Page A-4
White	V10C-ALL-A3-W-M-M2-L	631-91038	Interface accessories	From Page A-53

VISOR® V10 Allround Advanced, narrow field of view

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Efficient part detection and tracking
- Real-world engineering units at a mouse click
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	800 x 600 Pixel
Imaging chip CMOS	1/3.6", monochrome / color
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)

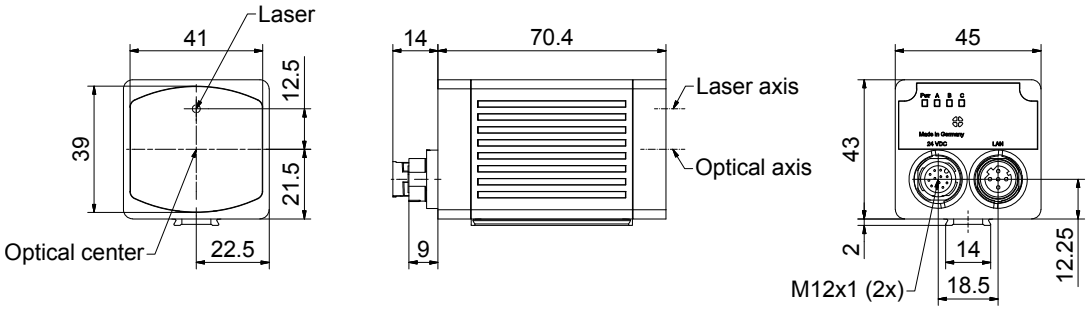
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Position tracking: X/Y and orientation; **Pattern matching / Contour:** teach-in and detection of patterns and contours; **Calliper**: distance between edges; **BLOB, Grey threshold, Brightness:** evaluation of brightness; **Contrast:** evaluation of contrast; **Color value**[2]: output of color values; **Color area**[2]: area inspection of colors, with selectable tolerance; **Color list**[2]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[3]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

[1] Not Color hardware [2] Color hardware [3] Max. ripple < 5 V_{SS} [2] 80 % air humidity, noncondensing

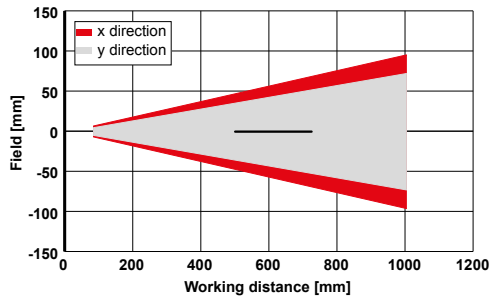
VISOR® vision sensor



153-13554

3

Field of view V10, narrow



155-03097

——— Normal depth of field

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

Illumination	Part number	Article number	Accessories	
White	V10-ALL-A3-W-N-M2-L	631-91006	Connection cables	From Page A-46
Red	V10-ALL-A3-R-N-M2-L	631-91009	Illumination	From Page A-33
Infrared	V10-ALL-A3-I-N-M2-L	631-91030	Brackets	From Page A-4
White	V10C-ALL-A3-W-N-M2-L	631-91039	Interface accessories	From Page A-53

VISOR® V10 Allround Advanced, C-Mount

Combines VISOR® Object Color, Code Reader

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Efficient part detection and tracking
- Real-world engineering units at a mouse click
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	800 x 600 Pixel
Imaging chip CMOS	1/3.6", monochrome / color
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	Laser: red (635 nm) class 1 (IEC 60825-1)

Functions	
Number of jobs / detectors	max. 255 / max. 255
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 value**[1]: output of color values; **Color area**[1]**:** area inspection of colors, with selectable tolerance; **Color list**[1]: finding the most similar colors **Barcode:** reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; **Datacode:** reading 2D codes: ECC200, QR code, GS1, PDF 417; **OCR:** reading of fonts

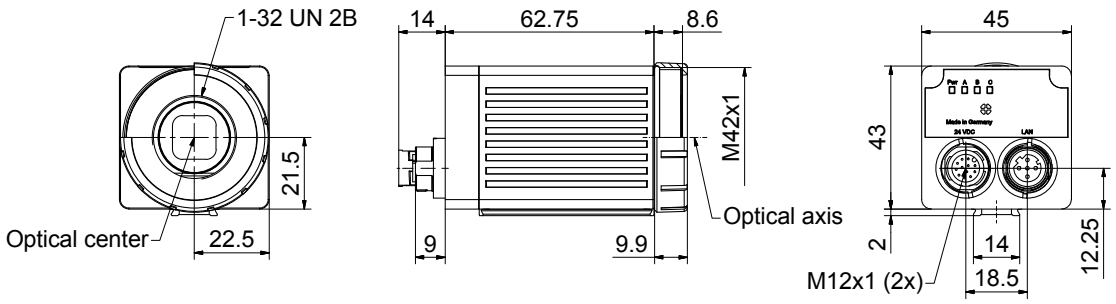
Electrical data	
Operating voltage, $+U_B$	18 … 30 DC[2]
Current consumption (without I/O)	≤ 300 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)
Switching threshold inputs incl. encoder	PNP/NPN High > U_B-1 V / Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb, Service Port
Inputs/outputs	2 inputs, 2 outputs, 6 selectable inputs/outputs
Encoder	✓

Mechanical data	
Dimensions	70.4 x 45 x 45 mm (without plug)
Enclosure rating	IP 67 & IP 65[3]
Material, housing	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[4]
Ambient temperature: storage	-20 … +60 °C[4]
Weight	Approx. 200 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin
Vibration resistance	EN 60068-2-6
Shock resistance	EN 60068-2-27

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



153-13555

Lens

Illumination, Multishot

155-02565

Illumination	Part number	Article number
White	LM 100 WWK-24Q4-2L12	532-51096
Red	LM 100 RWK-24Q4-2L12	532-51097
–	LM 100 W DF	532-51098

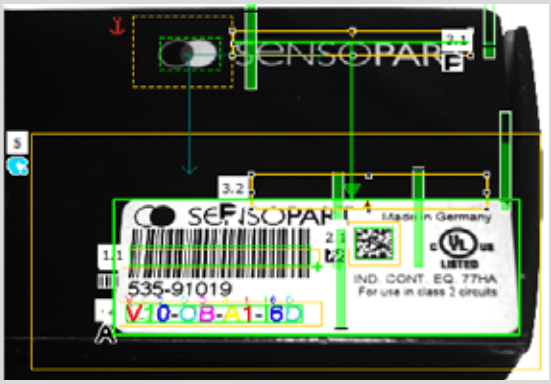
	LO C 8	LO C 12	LO C 16	LO C 25	LO C 35	LO C 50	LO C 75
Focal length	8 mm	12 mm	16 mm	25 mm	35 mm	50 mm	75 mm
Article number	526-51513	526-51514	526-51515	526-51516	526-51525	526-51113	526-51116

Part number	Article number
V10-ALL-A3-C-2	631-91003
V10C-ALL-A3-C-2	631-91036

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® Allround

Advanced allround vision sensor for complex inspection tasks.



VISOR® Allround – Object detection in colour plus identification united in one device.
The VISOR® Allround is the latest member in the VISOR family and a real multi-talent among vision sensors. In the new allround version, the device unites the functions of the object sensor (i.a. calibration, pattern matching, contour, calliper, BLOB) with the powerful tools of the code reader (bar code, datamatrix and optical character recognition).

HIGHLIGHTS OF VISOR® ALLROUND

- All evaluations (“Detectors”) of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 megapixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Datamatrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

The one with a BLOB:
With the new 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.

VISOR® Allround – Object detection in colour plus identification united in one device.

The VISOR® Allround is the latest member in the VISOR® family and a real multi-talent among vision sensors. In the new allround version, the device unites the functions of the object sensor (i.a. calibration, pattern matching, contour, calliper, BLOB) with the powerful tools of the code reader (bar code, datamatrix and optical character recognition). When feeding parts in correct alignment or positioning components, additional data matrix codes for example can now also be read. With a resolution of up to 1.3 megapixel even the smallest details are reliably detected and evaluated.

In addition to the monochrome version, the VISOR® Allround is also available as a colour version with up to 1.3 megapixel. Thus additional "Detectors" are available for colour evaluation. Even the subtlest nuances in shade can be reliably detected. The relevant object colours, for example, can be taught-in quite simply by push of a button or - thanks to the intuitive colour histogram - set graphically for each channel in the colour space. The authorised colour tolerances can be defined by the user.

VISOR® Allround – Product Overview					
	Firmware Option	Resolution	Focal Length	Integrated illumination	Page
V20-ALL-A2-xxx	Advanced	1280 x 1024 pixels	12 mm	White, red or infrared	120
V20-ALL-A2-xxx	Advanced	1280 x 1024 pixels	C-mount	None	122
V20-ALL-P2-xxx	Professional	1280 x 1024 pixels	12 mm	White, red or infrared	124
V20-ALL-P2-xxx	Professional	1280 x 1024 pixels	C-mount	None	126
V20C-ALL-A2-xxx	Advanced	1280 x 1024 pixels	12 mm	White	128
V20C-ALL-A2-xxx	Advanced	1280 x 1024 pixels	C-mount	None	130
V10-ALL-A2-xxx	Advanced	736 x 480 pixels	6 mm	White, red or infrared	132
V10-ALL-A2-xxx	Advanced	736 x 480 pixels	12 mm	White, red or infrared	134
V10-ALL-A2-xxx	Advanced	736 x 480 pixels	25 mm	White, red or infrared	136
V10-ALL-A2-xxx	Advanced	736 x 480 pixels	C-mount	None	138
V10C-ALL-A2-xxx	Advanced	736 x 480 pixels	6 mm	White	140
V10C-ALL-A2-xxx	Advanced	736 x 480 pixels	12 mm	White	142
V10C-ALL-A2-xxx	Advanced	736 x 480 pixels	25 mm	White	144
V10C-ALL-A2-xxx	Advanced	736 x 480 pixels	C-mount	None	146

VISOR® V20 Allround

Advanced vision sensor for complex inspection tasks, 12 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

Resolution	1280 x 1024 pixels
CMOS	1/1.8", monochrome
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White, red, infrared LEDs
Minimum field of view, X x Y	16 x 13 mm[2]

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, Data code, Bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold typ. 30 ms bar code typ. 40 ms data code typ. 15 ms per character OCR

Electrical data

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

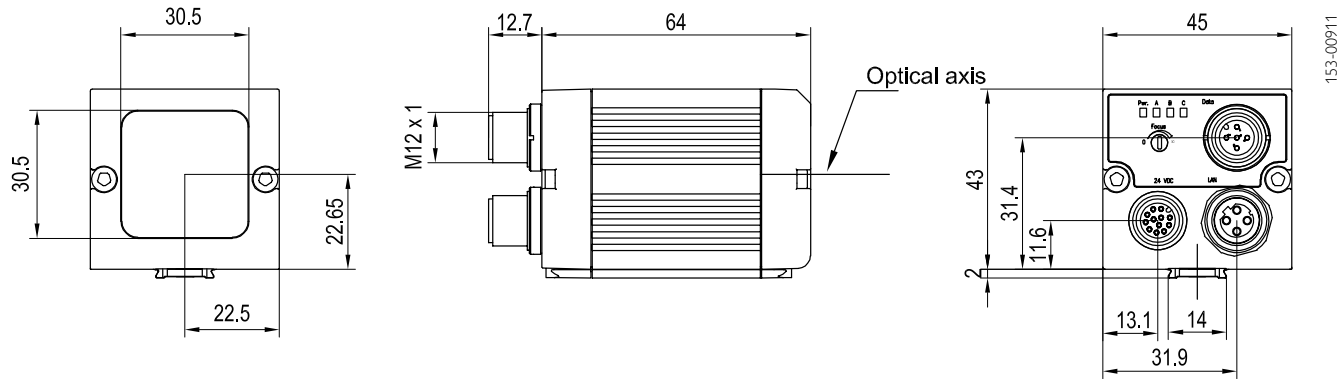
Mechanical data

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

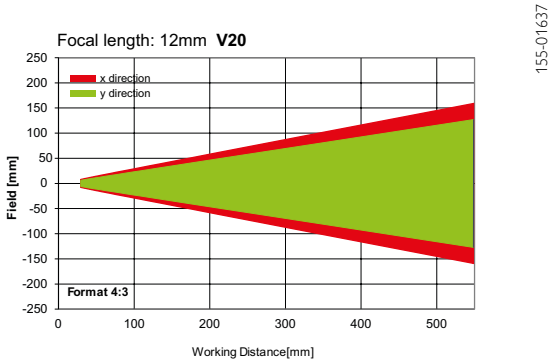
[1] Max. ripple < 5 V_{SS} [2] with VGA-resolution (640 x 480 pixels) [3] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

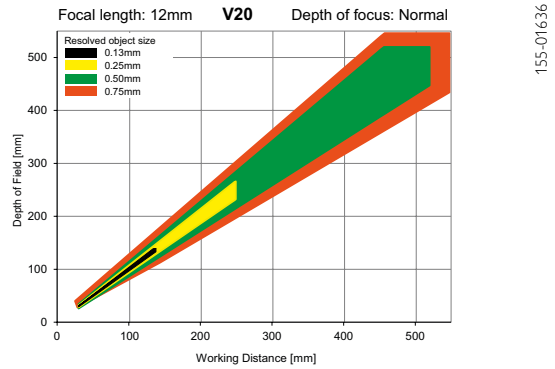
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V20-ALL -A2-W12	536-91032
Red	V20-ALL-A2-R12	536-91033
Infrared	V20-ALL-A2-I12	536-91034

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V20 Allround

Advanced vision sensor for complex inspection tasks, C-mount

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

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

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, Data code, Bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold typ. 30 ms Bar code typ. 40 ms Data code typ. 15 ms per character OCR

Electrical data

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

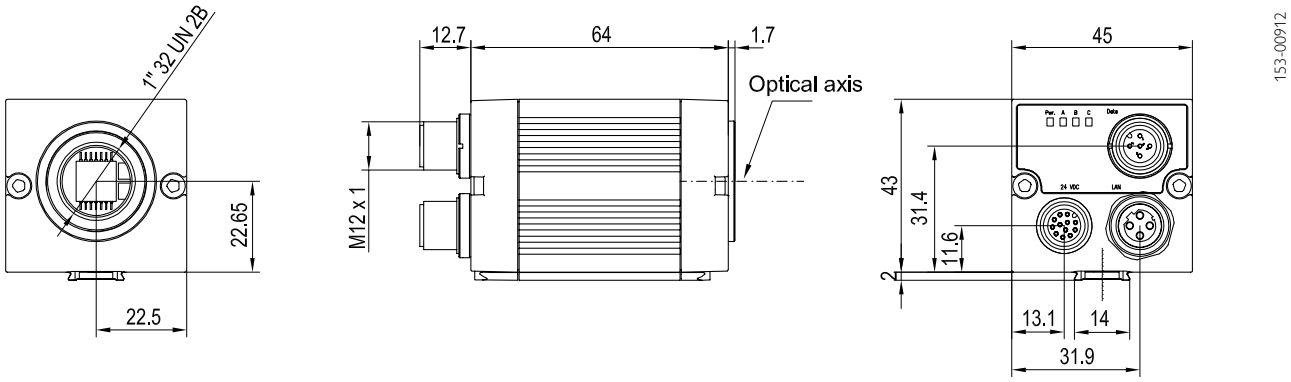
Mechanical data

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

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

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

Part number	Article number
V20-ALL-A2-C	536-91035

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V20 Allround

Advanced vision sensor Professional for complex inspection tasks, 12 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise determination of X/Y position, orientation and tracking
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

Resolution	1280 x 1024 pixels
CMOS	1/1.8", monochrome
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White, red, infrared LEDs
Minimum field of view, X x Y	16 x 13 mm[2]

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, Data code, Bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold typ. 30 ms bar code typ. 40 ms data code typ. 15 ms per character OCR

Electrical data

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

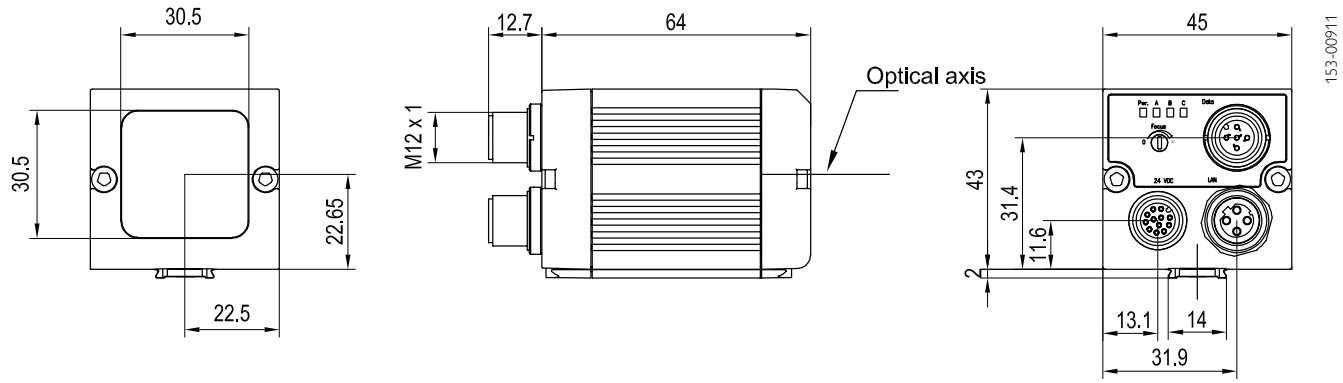
Mechanical data

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

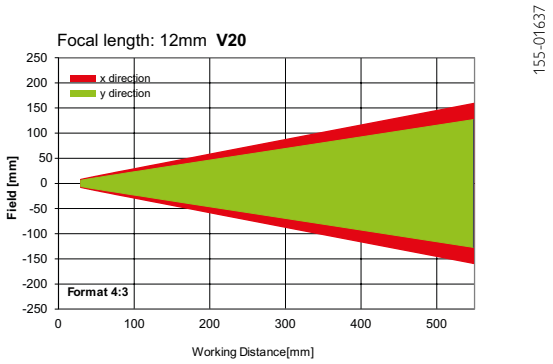
[1] Max. ripple < 5 V_{SS} [2] with VGA-resolution (640 x 480 pixels) [3] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

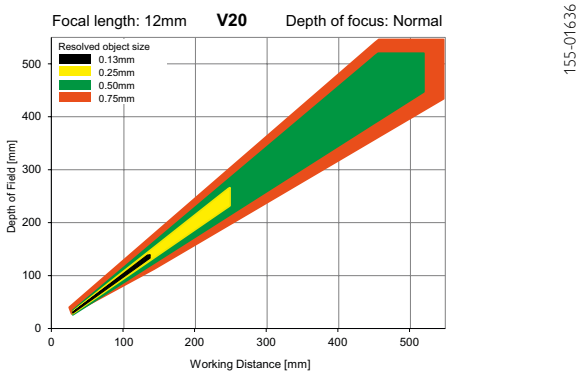
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination Multishot

Illumination	Part number	Article number
White	LM300 WWK-24Q4-2L12	525-51158
Red	LM300 RWK-24Q4-2L12	525-51159
Infrared	LM300 IWK-24Q4-2L12	525-51160

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

Part number	Article number
V20-ALL-P2-W12	536-91040
V20-ALL-P2-R12	536-91041
V20-ALL-P2-I12	536-91042

VISOR® V20 Allround

Advanced vision sensor Professional for complex inspection tasks, C-mount

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Detection of differences in height in the pseudo height image with multishot technology
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

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

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, Data code, Bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold typ. 30 ms Bar code typ. 40 ms Data code typ. 15 ms per character OCR

Electrical data

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

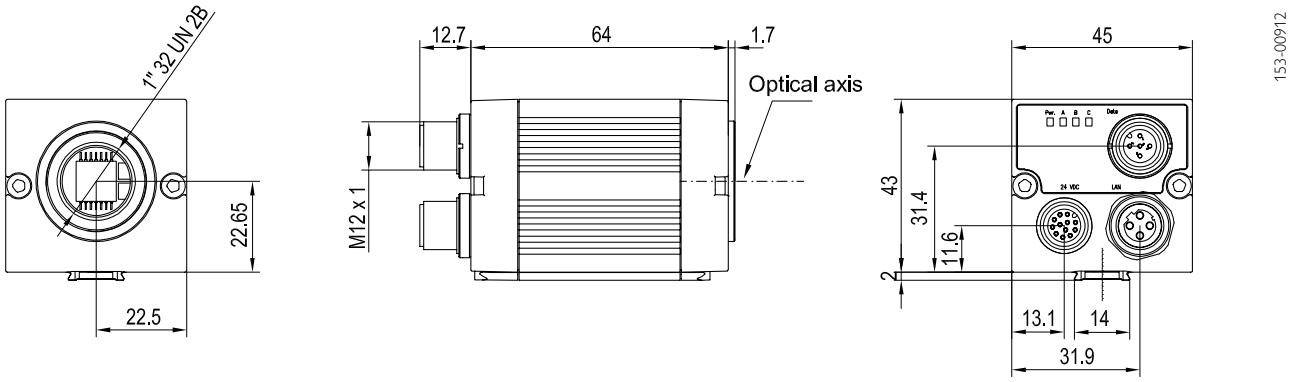
Mechanical data

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

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

Illumination Multishot

	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

Illumination	Part number	Article number
White	LM300 WWK-24Q4-2L12	525-51158
Red	LM300 RWK-24Q4-2L12	525-51159
Infrared	LM300 IWK-24Q4-2L12	525-51160

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53

Part number	Article number
V20-ALL-P2-C	536-91043

VISOR® V20 Allround Color

Advanced vision sensor for complex inspection tasks, 12 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel colour chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	1280 x 1024 pixels
CMOS	1/1.8", colour
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	16 x 13 mm[2]

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB, grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tolerance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison; typ. 30 ms contour;typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

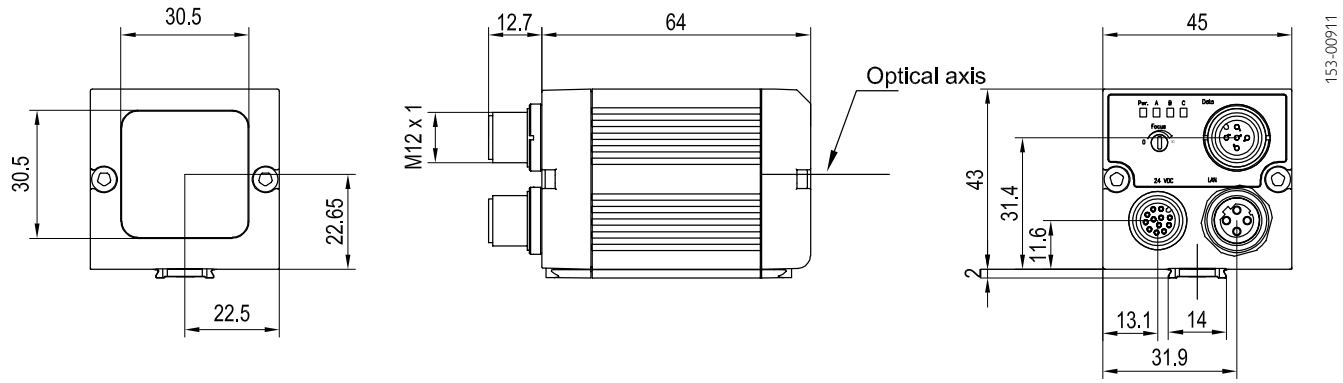
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

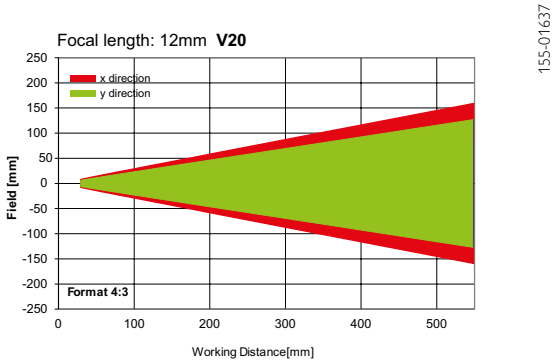
[1] Max. ripple < 5 V_{SS} [2] with VGA-resolution (640 x 480 pixels) [3] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

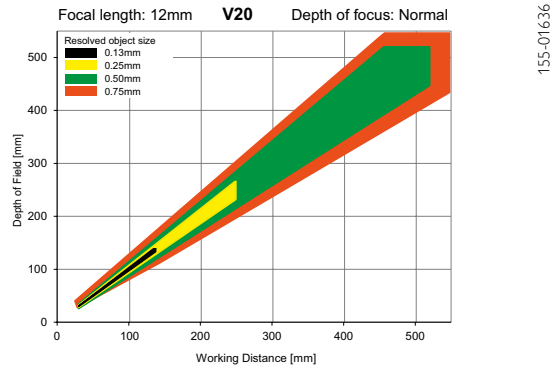
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V20C-ALL -A2-W12	536-91036

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V20 Allround Color

Advanced vision sensor for complex inspection tasks, C-mount

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Highly accurate evaluation via 1.3 mega- pixel colour chip
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

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

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tole-rance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times[2]	Typ. 20 ms pattern comparison; typ. 30 ms contour; typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

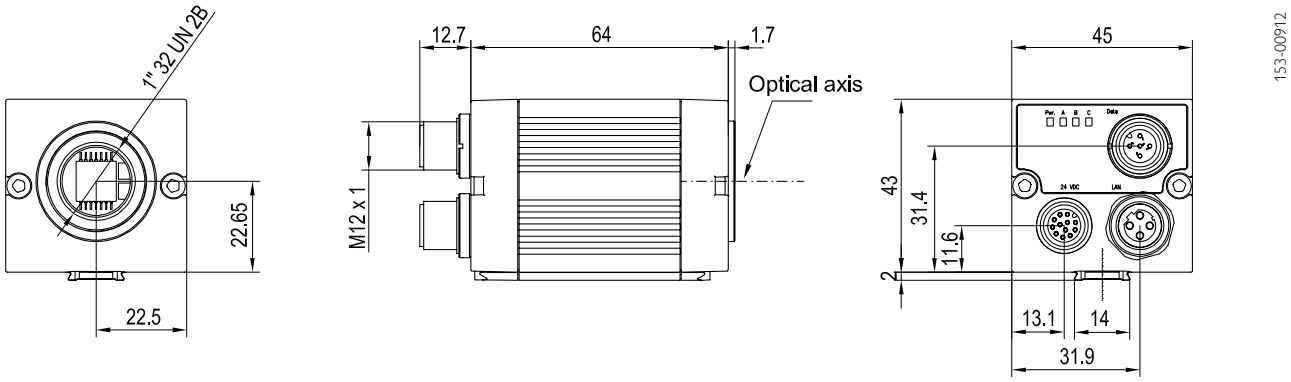
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

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

Part number	Article number
V20C-ALL -A2-C	536-91037

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround

Allround vision sensor for complex inspection tasks, 6 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

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

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold Typ. 30 ms bar code Typ. 40 ms data code Typ. 15 ms per character OCR

Electrical data

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

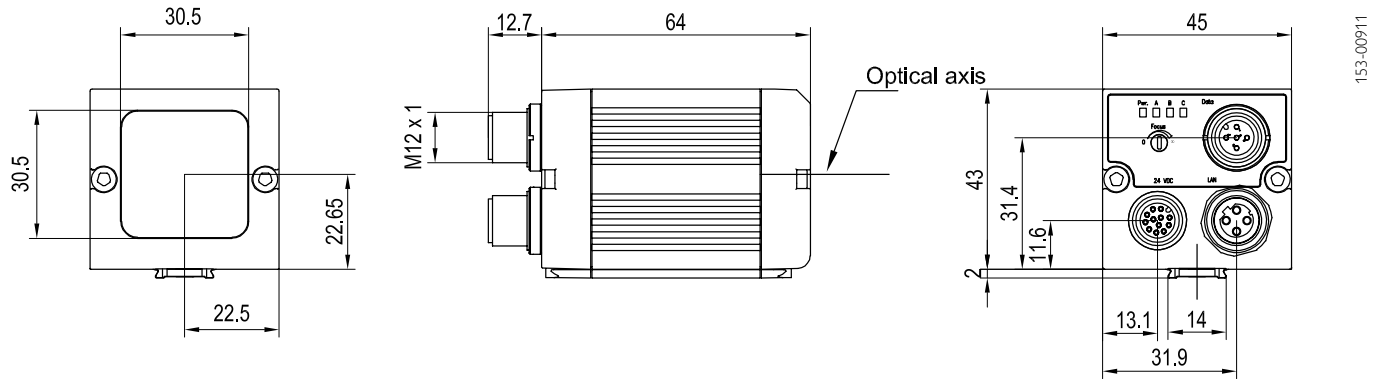
Mechanical data

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

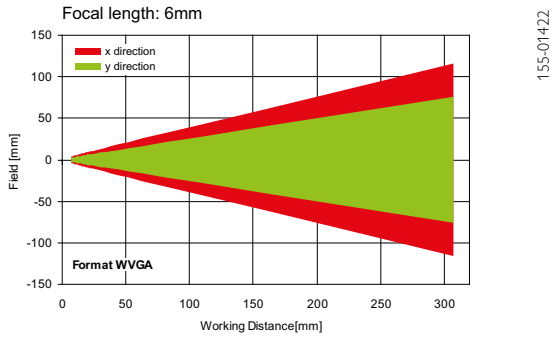
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

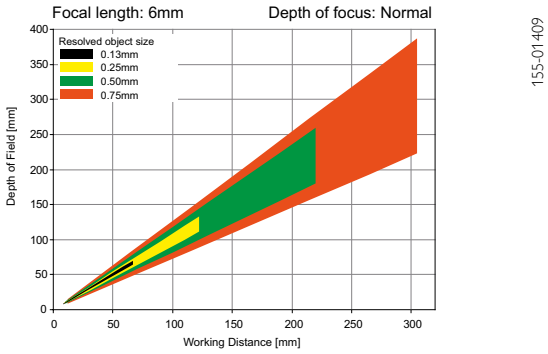
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10-ALL-A2-W6	535-91092
Red	V10-ALL-A2-R6	535-91095
Infrared	V10-ALL-A2-I6	535-91098

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround

Allround vision sensor for complex inspection tasks, 12 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", monochrome
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White, red, infrared LEDs
Minimum field of view, X x Y	8 x 6 mm[2]

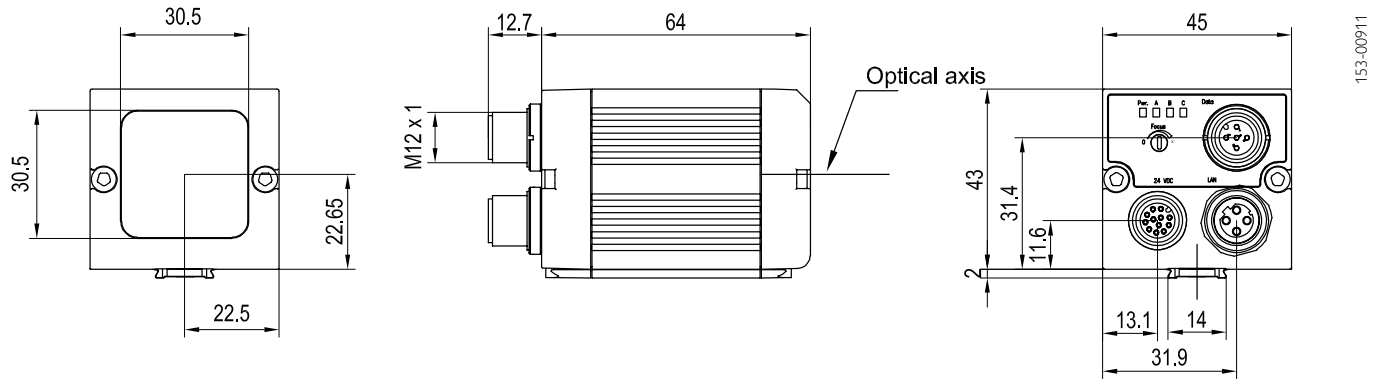
Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold Typ. 30 ms bar code Typ. 40 ms data code Typ. 15 ms per character OCR

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

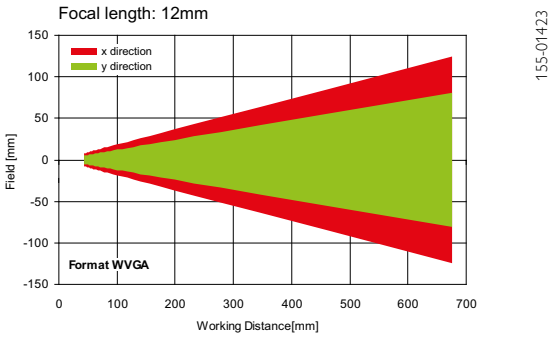
Mechanical data	
Dimensions	65 x 45 x 45 mm (without plug)
Enclosure rating	IP 67
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50° C[2]
Ambient temperature: storage	-20 … +60° C[2]
Weight	Ca. 160 g
Plug connections	Supply and I/O M12, 12-pin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

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

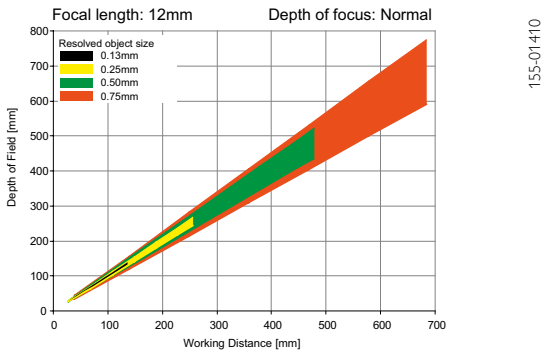
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10-ALL-A2-W12	535-91093
Red	V10-ALL-A2-R12	535-91096
Infrared	V10-ALL-A2-I12	535-91099

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround

Allround vision sensor for complex inspection tasks, 25 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

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

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold Typ. 30 ms bar code Typ. 40 ms data code Typ. 15 ms per character OCR

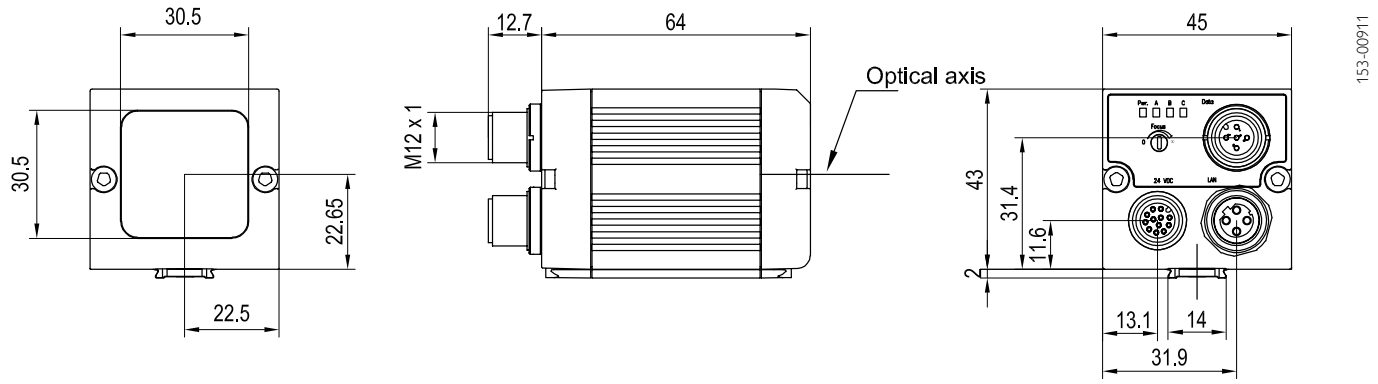
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

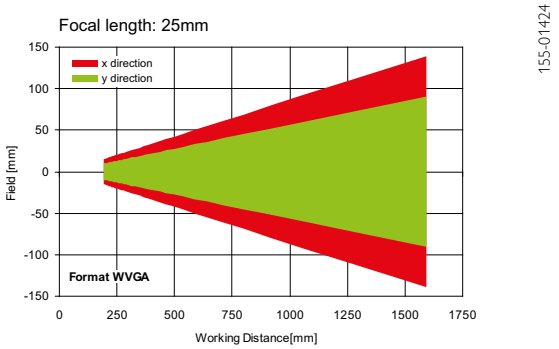
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

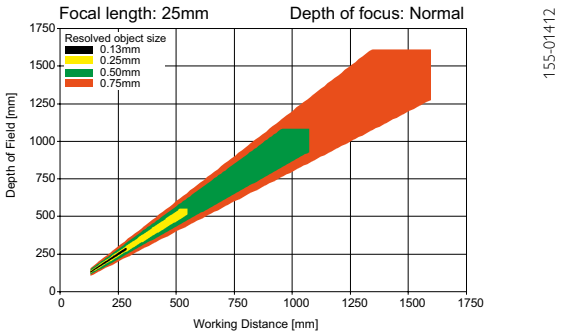
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10-ALL-A2-W25	535-91094
Red	V10-ALL-A2-R25	535-91097
Infrared	V10-ALL-A2-I25	535-91100

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround

Allround vision sensor for complex inspection tasks, C-mount

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data

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

Functions

Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR
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; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison Typ. 30 ms contour Typ. 8 ms calliper Typ. 30 ms BLOB Typ. 2 ms brightness Typ. 2 ms contrast Typ. 2 ms grey threshold Typ. 30 ms bar code Typ. 40 ms data code Typ. 15 ms per character OCR

Electrical data

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

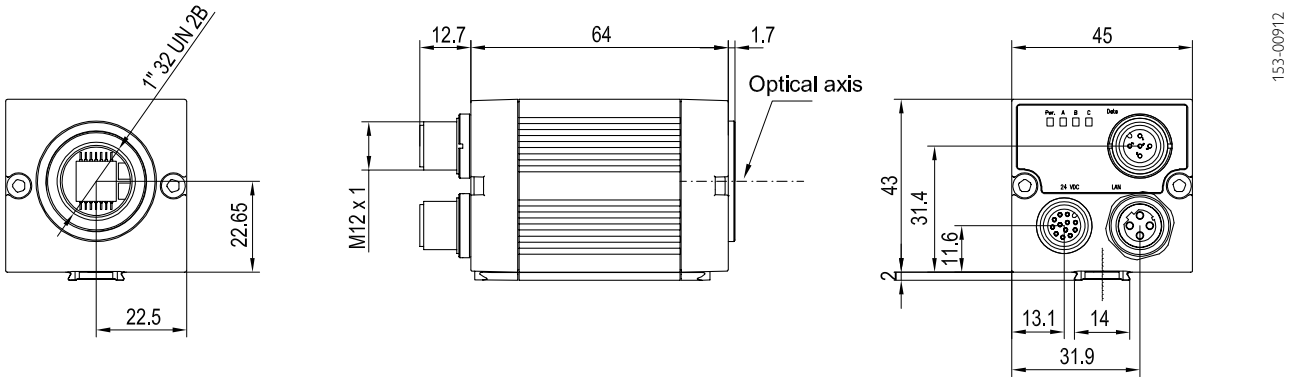
Mechanical data

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

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

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

Part number	Article number
V10-ALL-A2-C	535-91101

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround Color

Allround vision sensor for complex inspection tasks, 6 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	6 mm, adjustable focal position
Adjustment range	6 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	5 x 4 mm[2]

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors'	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tolerance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour; typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

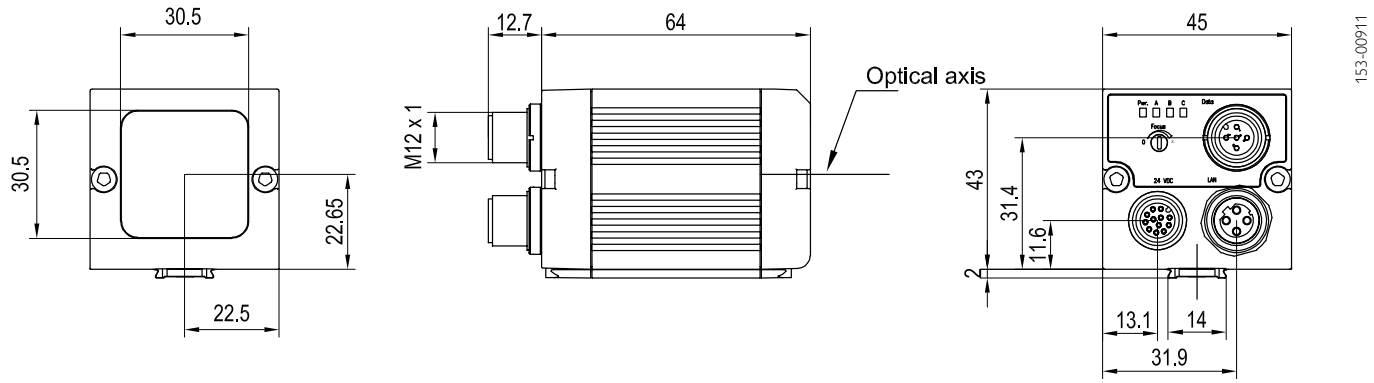
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

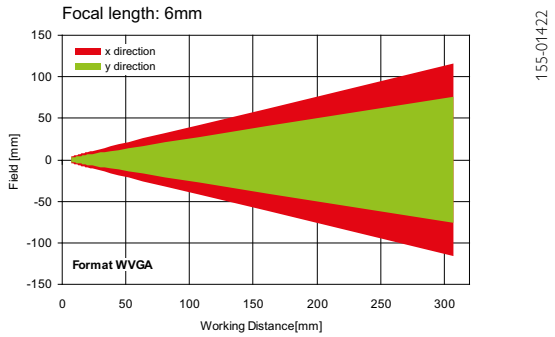
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

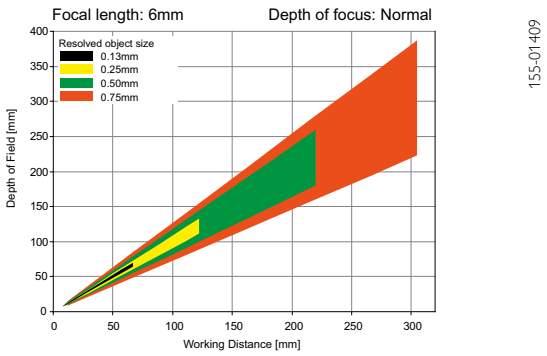
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10C-ALL-A2-W6	535-91102

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround Color

Allround vision sensor for complex inspection tasks, 12 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	12 mm, adjustable focal position
Adjustment range	30 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	8 x 6 mm[2]

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level-data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tole-rance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour;typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

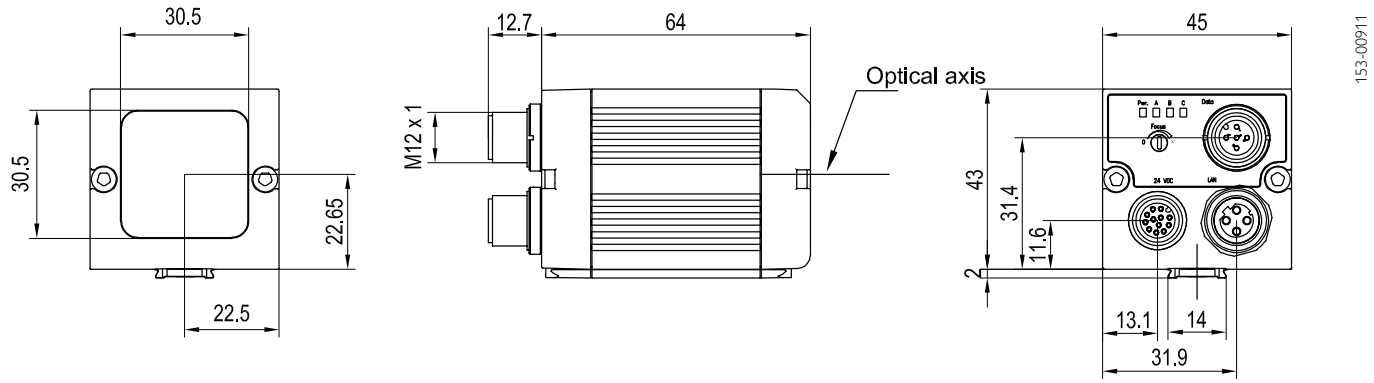
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

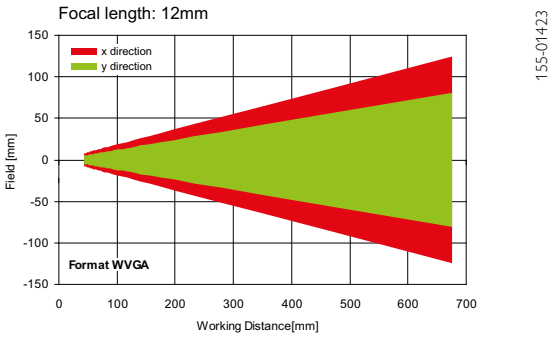
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

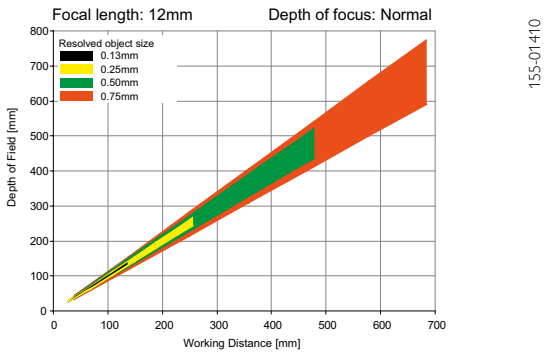
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10C-ALL-A2-W12	535-91103

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround Color

Allround vision sensor for complex inspection tasks, 25 mm

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", colour
Integrated lens, focal length	25 mm, adjustable focal position
Adjustment range	140 mm to infinity
Integrated illumination	White LEDs
Minimum field of view, X x Y	18 x 14 mm²

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level, data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tolerance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour;typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

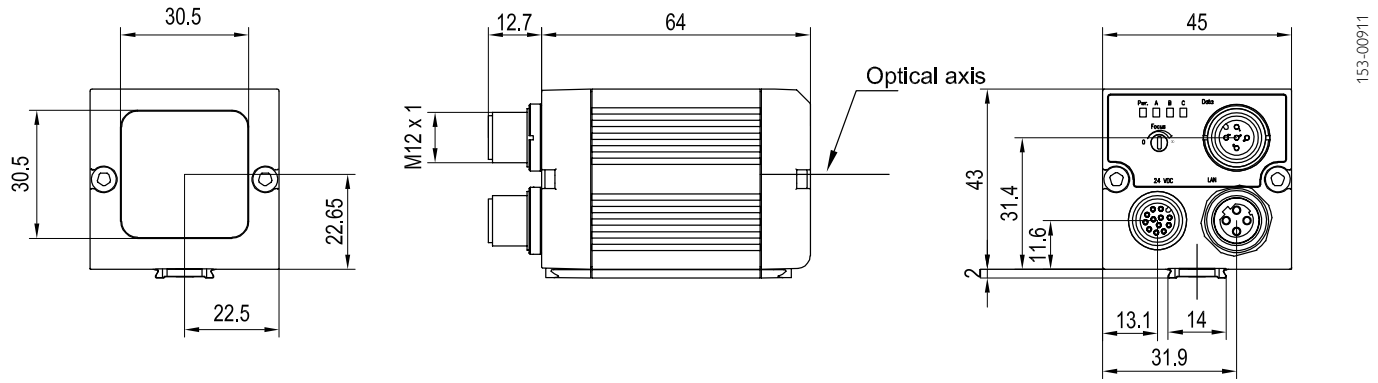
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

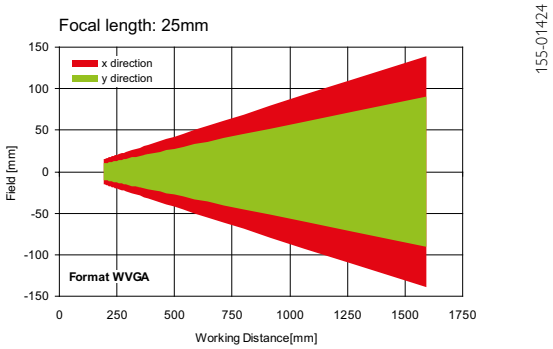
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Version: 02/2019. Subject to changes; diagrams similar

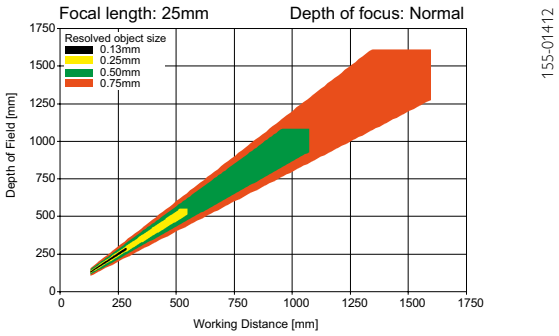
VISOR® vision sensor



Field of view



Depth of field: normal



Illumination	Part number	Article number
White	V10C-ALL-A2-W25	535-91104

Accessories

Connection cables	From Page A-46
Illumination	From Page A-33
Brackets	From Page A-4
Interface accessories	From Page A-53

VISOR® V10 Allround Color

Allround vision sensor for complex inspection tasks, C-mount

PRODUCT HIGHLIGHTS

- All evaluations ("Detectors") of object sensor and code reader united in one device
- Real-world engineering units and robot coordinates at a mouse click
- Precise position determination: X/Y-position and orientation
- Can be used for all common 2D-Codes (ECC 200-Data-matrix) and common 1D-bar codes
- User-friendly configuration and viewer software with graded user rights and online help

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

Functions	
Number of jobs / detectors	max. 255 / max. 255
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level; data code, bar code, OCR, colour list, colour area, colour value
Properties	Position tracking: X/Y and orientation; pattern comparison / contour: teach-in and detection of patterns and contours; calliper: distance between edges; BLOB; grey threshold, brightness: evaluation of brightness; contrast: evaluation of contrast; colour value: output of colour values; colour area: two-dimensional colour inspection with adustable tolerance; colour list: detecting the most similar colours; bar code: reading 1D bar codes, EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, code 32, code 39, code 93, code 128, GS1, pharm code, codabar; data code: reading 2D codes: ECC200, QR code, PDF 417; OCR
Typical cycle times	Typ. 20 ms pattern comparison; typ. 30 ms contour;typ. 8 ms calliper; typ. 30 ms BLOB; typ. 2 ms brightness; typ. 2 ms contrast; typ. 2 ms grey threshold; typ. 2 ms colour value; typ. 30 ms colour area; typ. 2 ms colour list; typ. 30 ms bar code; typ. 40 ms data code; typ. 15 ms per character OCR

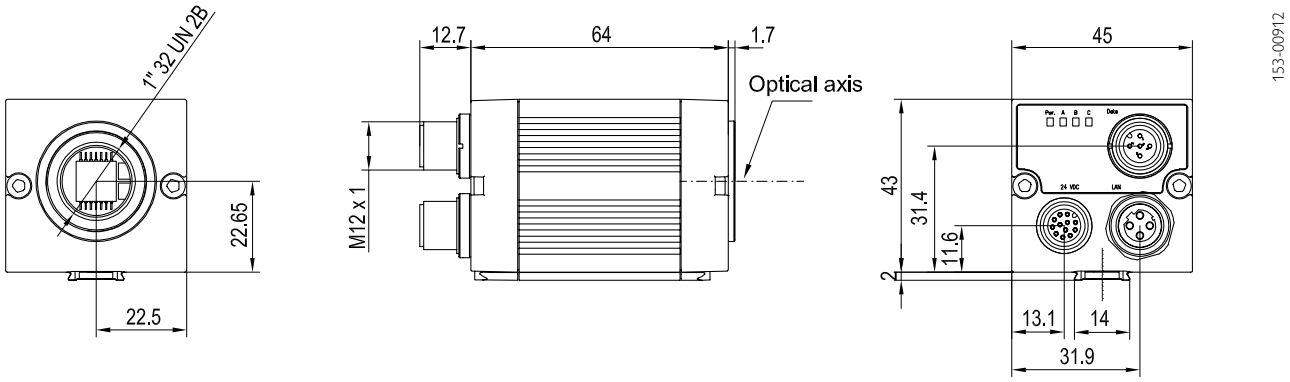
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

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

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

Version: 02/2019. Subject to changes; diagrams similar

VISOR® vision sensor



Lens

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

Part number	Article number
V10C-ALL-A2-C	535-91105

Accessories	
Connection cables	From Page A-46
Illumination	From Page A-33
Lenses	From Page A-28
Brackets	From Page A-4
Interface accessories	From Page A-53