VISOR® V20 Robotic

Advanced vision sensor for robotics applications, 12 mm

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IP 67
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PROFI NET®
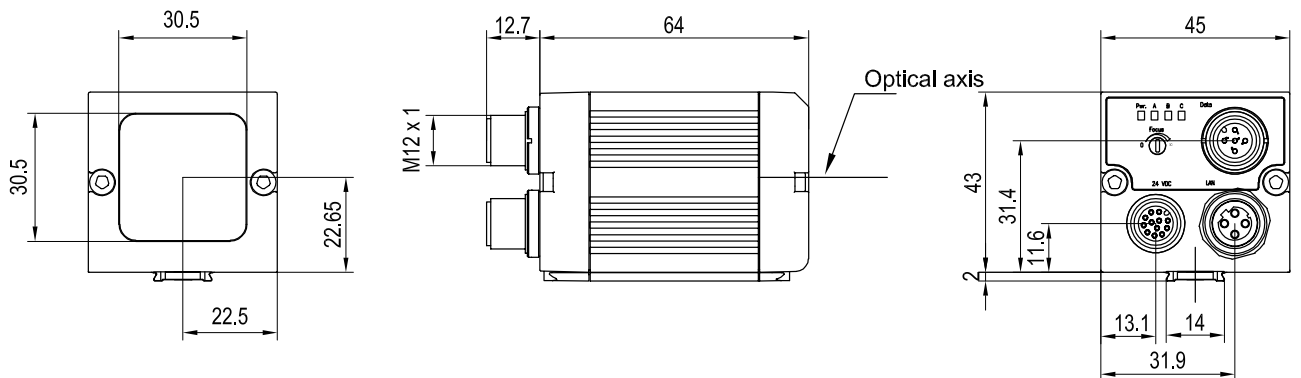EtherNet/IP™
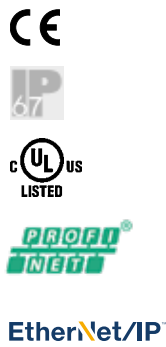
PRODUCT HIGHLIGHTS

- Different detectors for locating up to 10,000 components
- Gripping space check – check for available space around gripper
- Result offset correction in VISOR® software for simple adjustment of gripper point
- Two calibration methods for robotics applications
- Offset of work plane through Z-offset function
- High-precision analysis due to 1.3 megapixel resolution

Optical data	
Resolution	1280 × 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 × Y	16 × 13 mm²

Functions	
Number of jobs / detectors	max. 255 / max. 255
Special functions	Calibration plate (Robot) Point pair list (Robot) Z-Offset Gripping space check Result offset correction
Detectors	Contour, pattern comparison, calliper, BLOB, contrast, brightness, grey level
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
Typical cycle times	same as VISOR® V20 Object sensor

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

Mechanical data	
Dimensions	65 × 45 × 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	Approx. 160 g
Plug connections	Supply and I/O M12, 12-pin Ethernet M12, 4-pin Data M12, 5-pin
Vibration and impact resistance	EN 60947-5-2

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

Illumination	Part number	Article number
White	V20-RO-A2-W12	536-91047
Red	V20-RO-A2-R12	536-91048
Infrared	V20-RO-A2-I12	536-91049

Version: 01/2018. Subject to changes; diagrams similar

VISOR® vision sensor

30.5

30.5

22.65

22.5

12.7   64

M12 x 1

Optical axis

45

43

31.4

11.6

2

13.1   14

31.9

153-00911

Field of view

Focal length: 12mm **V20**

155-01637

x direction
y direction

250
200
150
100
50
0
-50
-100
-150
-200
-250

Field [mm]

Format 4:3

0   100   200   300   400   500

Working Distance[mm]

Depth of field: normal

Focal length: 12mm **V20**   Depth of focus: Normal

155-01636

Resolved object size
0.13mm
0.25mm
0.50mm
0.75mm

500

400

300

200

100

0

Depth of Field [mm]

0   100   200   300   400   500

Working Distance [mm]
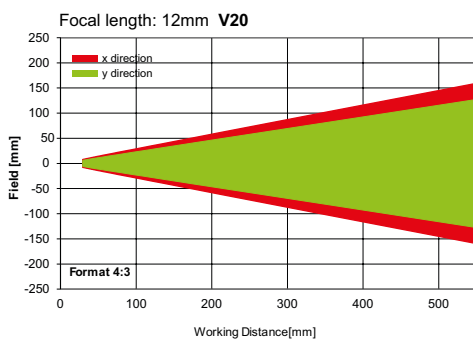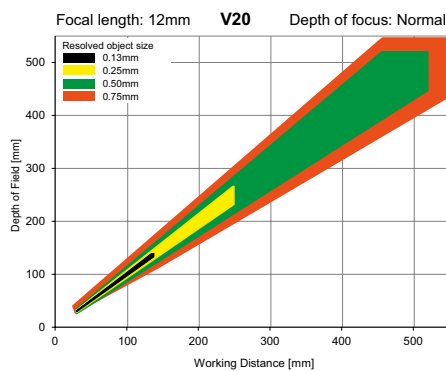
Accessories

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