Eyesight vision systems – everything is possible

At last. You can do what you want!

Taking measures:
The dimensional accuracy of an object (e.g. a turned or pressed part) is an important quality feature, and can indirectly provide information on its consistency, stresses or wear, preventing rejects in downstream processes.

Providing direction:
The correct alignment of an object is an important prerequisite for downstream processes, e.g. for positioning and tracking a gripper. Colours, shapes and contours are suitable for monitoring correct orientation.

Preventing faults:
Very different features can be checked at a glance with the Eyesight – here, for example, the position and colour of the cap, filling level and presence of the use-by date. This pays, because each unnoticed fault may be expensive later.

EYESIGHT HIGHLIGHTS

- Complete image-processing package with robust and flexible smart camera
- Programming via drag & drop of function blocks
- Complex iterative linkage of individual inspections
- Image and result visualisation in inspection mode
- Interpreter for programming one's own functions
- Image processing simulated on PC without camera
- Freely programmable data protocol for Ethernet and serial interface

Most image-processing applications can be rapidly and easily solved with pre-configured VISOR® vision sensors. However, their range of functions is not always sufficient for particularly demanding or specific tasks – but here, too, SensoPart has the right solution: the freely programmable Eyesight vision systems offer comprehensive configuration possibilities so that you can also implement very complex automation applications with the smart camera. Whereby complex is not synonymous with complicated: graphic programming by means of drag & drop makes it easy for you to "construct" your own applications.

Eyesight has numerous of routines for object measurement, position determination and tracking, data communication, warpage point determination, contour inspection/tracking, colour selection/monitoring, brightness correction as well as a variety of filter functions. What can otherwise only be achieved by fully-fledged image-processing systems, you can implement with Eyesight with considerably less effort – and at a relatively reasonable price.

Eyesight Vision Systems – Product Overview					
	Firmware Option	Resolution	Focal length	Integrated illumination	Page
V20-EYE-A2-xxx	Monochrome, colour	1280 x 1024 pixels	12	White, red or infrared LEDs	144
V20-EYE-A2-xxx	Monochrome, colour	1280 x 1024 pixels	C-Mount	None	146
V10-EYE-A1-xxx	Monochrome, colour	736 x 480 pixels	6	White, red or infrared LEDs	148
V10-EYE-A1-xxx	Monochrome, colour	736 x 480 pixels	12	White, red or infrared LEDs	150
V10-EYE-A1-xxx	Monochrome, colour	736 x 480 pixels	C-Mount	None	152

V20 Eyesight

Vision system for complex image-processing applications, 12 mm

PRODUCT HIGHLIGHTS

- Complete image-processing package with robust and flexible hardware, 1.3 mega pixel
- Programming via drag & drop of function blocks
- Complex, iterative linkage of individual inspections
- Image processing can be simulated on the PC without camera
- Image and result visualisation in inspection mode
- Script interpreter for advanced user functions

Optical data	
Resolution	1280 x 1024 pixels
CMOS	1/1.8", monochrome or colour
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 mm²

Functions	
Number of inspection programmes	No limitation (max. ca. 40 MB)
Functions	All function blocks for object measurement, position determination/ tracking, sequence control, data and image transfer, contour inspection, subprogrammes, script interpreter.
Properties	See overview of commands
Typical cycle times	Dependent on inspection programme

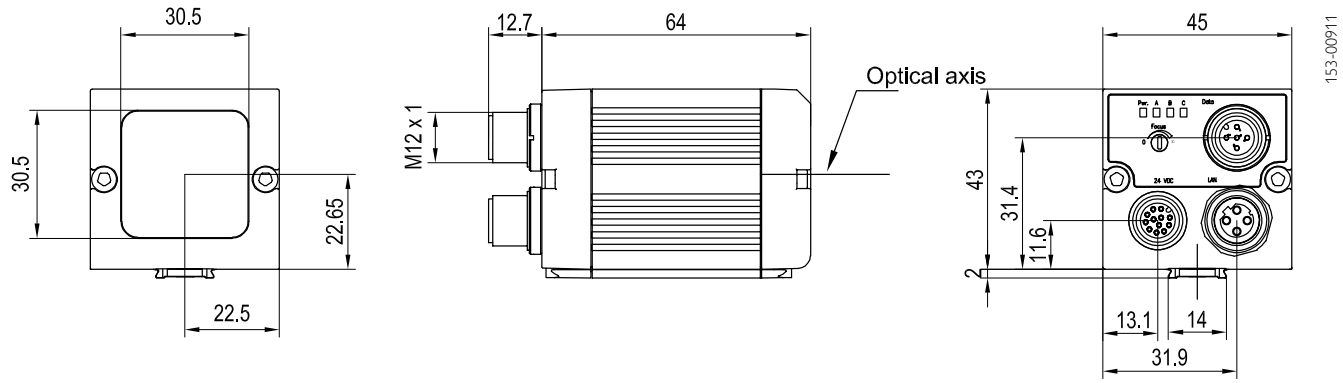
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (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

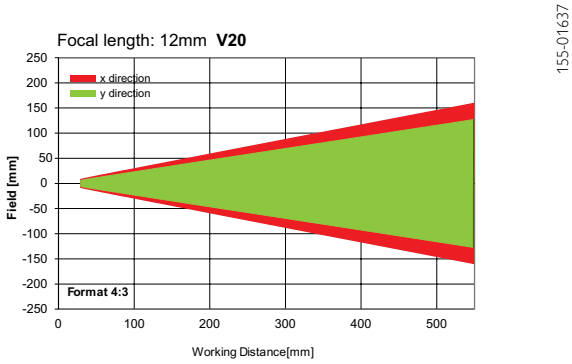
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Illumination	Product variant	Part number	Article number
White	Monochrome	V20-EYE-A2-W12	537-91008
Red	Monochrome	V20-EYE-A2-R12	537-91009
Infrared	Monochrome	V20-EYE-A2-I12	537-91010
White	Colour	V20C-EYE-A2-W12	537-91014

V20 vision system



Field of view



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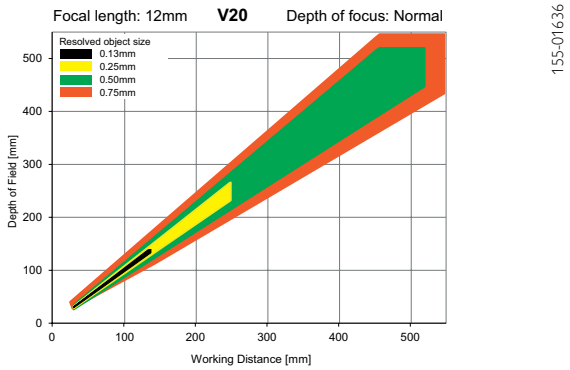


Accessories

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

V20 Eyesight

Vision system for complex image-processing applications, C-mount

PRODUCT HIGHLIGHTS

- Complete image-processing package with robust and flexible hardware, 1.3 mega pixel
- Programming via drag & drop of function blocks
- Complex, iterative linkage of individual inspections
- Image processing can be simulated on the PC without camera
- Image and result visualisation in inspection mode
- Script interpreter for advanced user functions

Optical data	
Resolution	1280 x 1024 pixels
CMOS	1/1.8", monochrome or 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 inspection programmes	No limitation (max. ca. 40 MB)
Functions	All function blocks for object measurement, position determination/ tracking, sequence control, data and image transfer, contour inspection, subprogrammes, script interpreter.
Properties	See overview of commands
Typical cycle times	Dependent on inspection programme

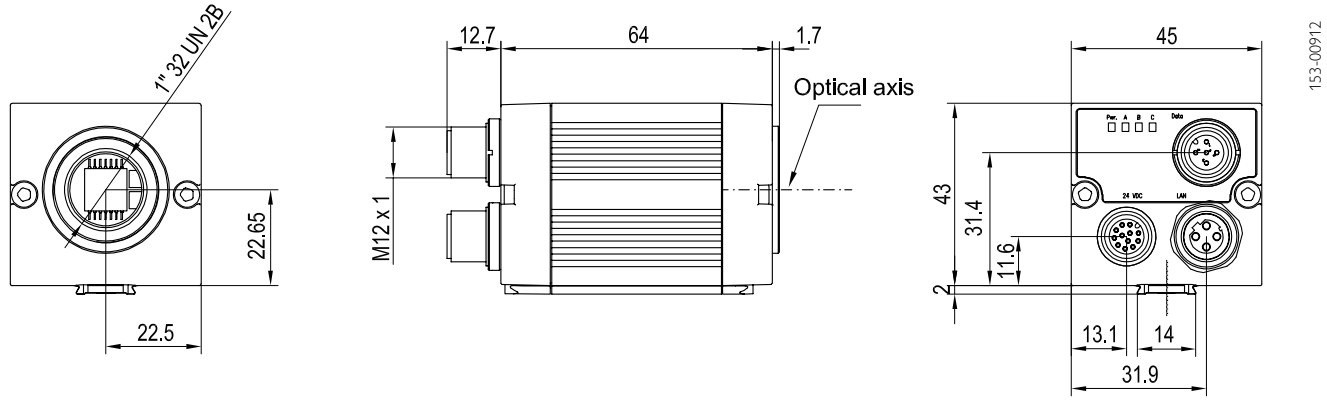
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (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

Product variant	Part number	Article number
Monochrome	V20-EYE-A2-C	537-91007
Colour	V20C-EYE-A2-C	537-91015

V20 vision system



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

Accessories

Connection cables	From Page A-34
Illumination	From Page A-27
Lenses	From Page A-25
Brackets	From Page A-4
Interface accessories	From Page A-38

V10 Eyesight

Vision system for complex image-processing applications, 6 mm

PRODUCT HIGHLIGHTS

- Complete image-processing package with robust and flexible hardware
- Programming via drag & drop of function blocks
- Complex, iterative linkage of individual inspections
- Image processing can be simulated on the PC without camera
- Image and result visualisation in inspection mode
- Script interpreter for advanced user functions

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", monochrome or colour
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 mm[2]

Functions	
Number of inspection programs	No limitation (max. ca. 40 MB)
Functions	All function blocks for object measurement, position determination / tracking, sequence control, data and image transfer, contour inspection, subprogrammes, script interpreter.
Properties	See overview of commands
Typical cycle times	Dependent on inspection programme

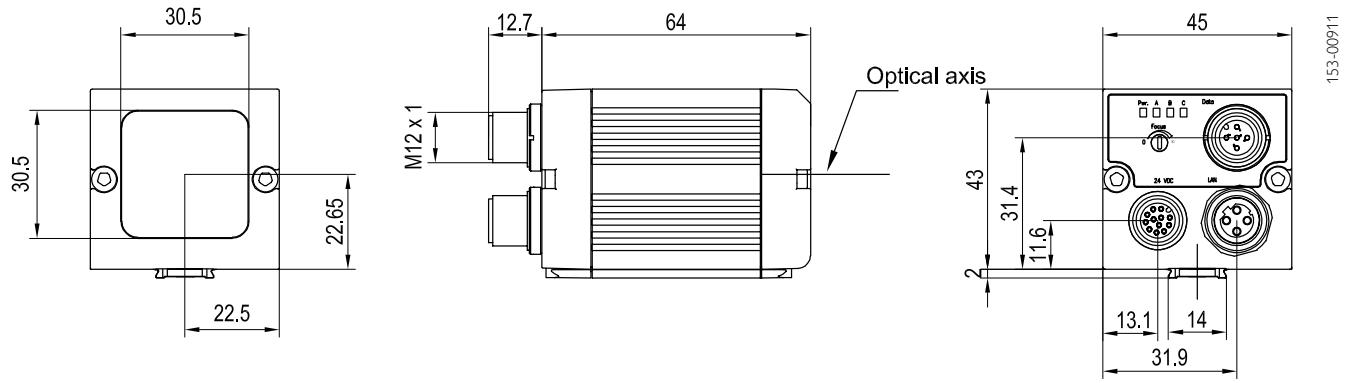
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (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

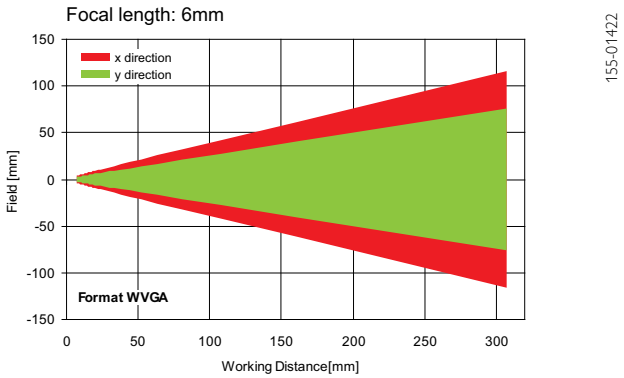
[1] Max. ripple < 5 V_{SS} [3] 80 % air humidity, non-condensing

Illumination	Product variant	Part number	Article number
White	Monochrome	V10-EYE-A1-W6	537-91000
Red	Monochrome	V10-EYE-A1-R6	537-91002
Infrared	Monochrome	V10-EYE-A1-I6	537-91005
White	Colour	V10C-EYE-A2-W6	537-91011

V10 vision system



Field of view



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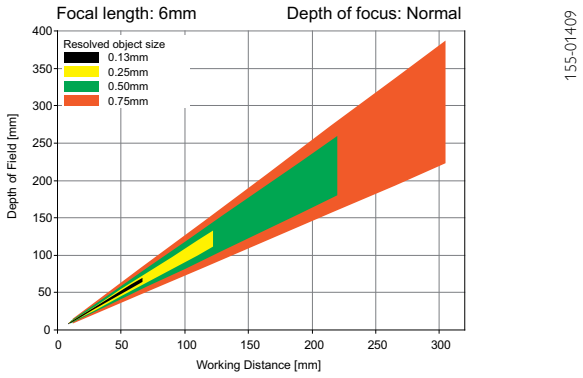


Accessories

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

V10 Eyesight

Vision system for complex image-processing applications, 12 mm

PRODUCT HIGHLIGHTS

- Complete image-processing package with robust and flexible hardware
- Programming via drag & drop of function blocks
- Complex, iterative linkage of individual inspections
- Image processing can be simulated on the PC without camera
- Image and result visualisation in inspection mode
- Script interpreter for advanced user functions

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", monochrome or colour
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 mm²

Functions	
Number of inspection programmes	No limitation (max. ca. 40 MB)
Functions	All function blocks for object measurement, position determination/ tracking, sequence control, data and image transfer, contour inspection, subprogrammes, script interpreter.
Properties	See overview of commands
Typical cycle times	Dependent on inspection programme

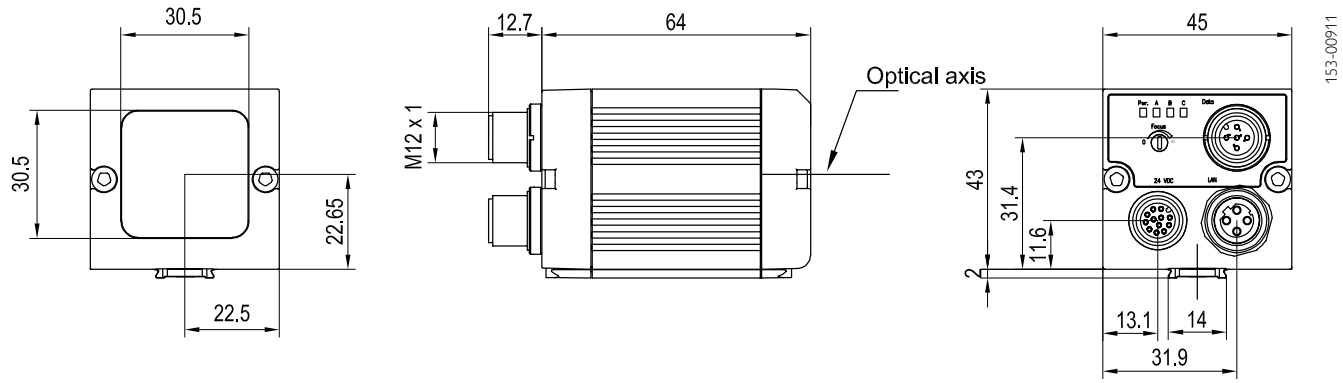
Electrical data	
Operating voltage, $+U_B$	18 … 26.4 V DC[1]
Current consumption (without illumination and I/O)	≤ 120 mA
Current consumption (without I/O)	≤ 200 mA
Protective circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Power On Delay	Ca. 13 s after Power on
Outputs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

Mechanical data	
Dimensions	65 x 45 x 45 mm³ (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

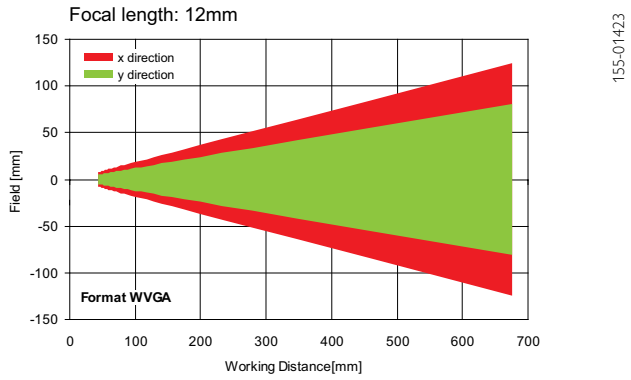
[1] Max. ripple < 5 V_{SS} [2] 80 % air humidity, non-condensing

Illumination	Product variant	Part number	Article number
White	Monochrome	V10-EYE-A1-W12	537-91001
Red	Monochrome	V10-EYE-A1-R12	537-91003
Infrared	Monochrome	V10-EYE-A1-I12	537-91006
White	Colour	V10C-EYE-A2-W12	537-91012

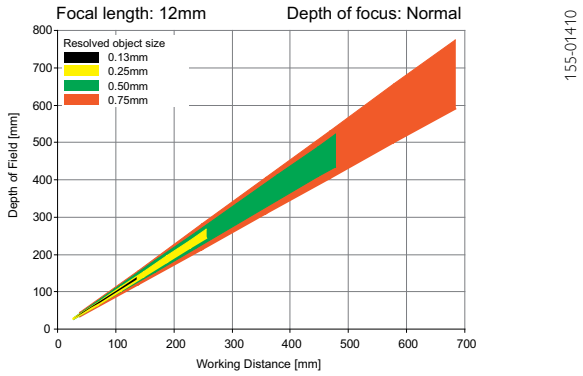
V10 vision system



Field of view



Depth of field: normal



Accessories

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

V10 Eyesight

Vision system for complex image-processing applications, C-mount

PRODUCT HIGHLIGHTS

- Complete image-processing package with robust and flexible hardware
- Programming via drag & drop of function blocks
- Complex, iterative linkage of individual inspections
- Image processing can be simulated on the PC without camera
- Image and result visualisation in inspection mode
- Script interpreter for advanced user functions

Optical data	
Resolution	736 x 480 pixels
CMOS	1/3", monochrome or 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 inspection programmes	No limitation (max. ca. 40 MB)
Functions	All function blocks for object measurement, position determination/ tracking, sequence control, data and image transfer, contour inspection, subprogrammes, script interpreter.
Properties	See overview of commands
Typical cycle times	Dependent on inspection programme

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
Max. output current (per output)	50 mA, 100 mA (pin 12)
Inputs	PNP High > U_B-1 V, Low < 3 V
Input resistance	> 20 kΩ
Interfaces	Ethernet (LAN), RS422, RS232
Inputs/outputs	2 inputs, 4 outputs, 4 selectable inputs/outputs

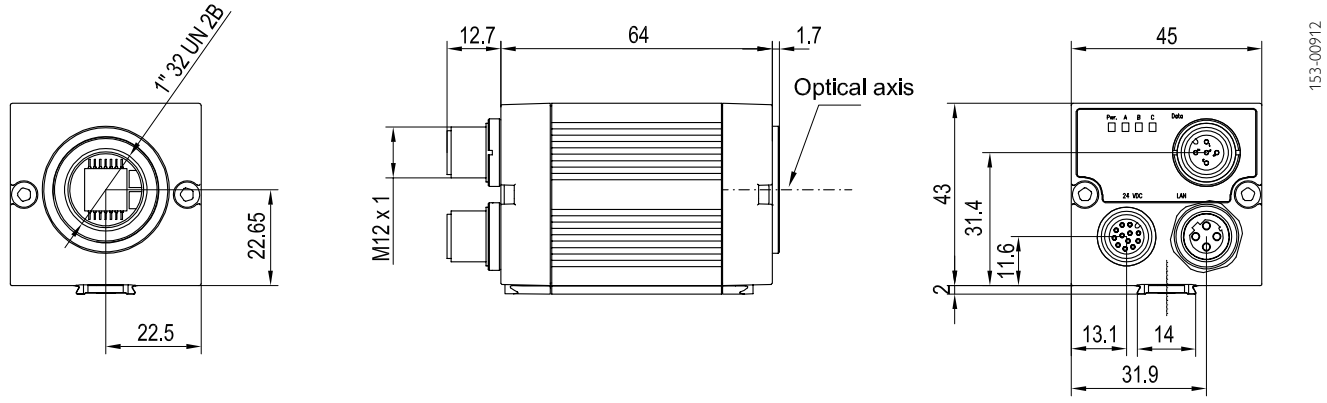
Mechanical data	
Dimensions	65 x 45 x 45 mm[3] (without plug)
Enclosure rating	IP 65[2]
Material, housing	Aluminium, plastic
Material, front screen	Plastic
Ambient temperature: operation	0 … +50 °C[3]
Ambient temperature: storage	-20 … +60 °C[3]
Weight	Ca. 160 g
Plug connections	Supply and I/O M12, 12-pin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

Product variant	Part number	Article number
Monochrome	V10-EYE-A1-C	537-91004
Colour	V10C-EYE-A2-C	537-91013

Version: 07/2015. Subject to changes; diagrams similar

V10 vision system



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

Accessories

Connection cables	From Page A-34
Illumination	From Page A-27
Lenses	From Page A-25
Brackets	From Page A-4
Interface accessories	From Page A-38