V2D654R-MCXXA6

Lector64x/Lector65x

IMAGE-BASED CODE READERS

SICK
Sensor Intelligence.

V2D654R-MCXXA6 | Lector64x/Lector65x

IMAGE-BASED CODE READERS

Ordering information

Type	Part no.
V2D654R-MCXXA6	1060892

Other models and accessories ➜ www.sick.com/Lector64x_Lector65x

Detailed technical data

Features

Variant	Main unit
Optical focus	Adjustable focus (manually)
Sensor	CMOS matrix sensor, grayscale values
Sensor resolution	2,048 px x 2,048 px
Illumination	To be ordered separately as accessories
Alignment aid	Laser, Red, 630 nm ... 680 nm
Laser class	1, complies with 21 CFR 1040.10 except for the conformance according to "Laser Notice No. 50" from June 24, 2007 (IEC 60825-1:2014, EN 60825-1:2014)
Scanning frequency	40 Hz, With resolution of 4 megapixels
Code resolution	≥ 0.1 mm [1]
Lens	C-mount
Optical format	1″
Note	To be ordered separately as accessories

[1] Depends on lens used.

Mechanics/electronics

Connection type	1 x M12, 17-pin plug (serial, CAN, I/Os, power supply) 2 x M12, 8-pin socket (Ethernet, P1 not yet with function) 1 x M8, 4-pin socket (USB)
Supply voltage	24 V DC, ± 20 %
Power consumption	Typ. 20 W, ± 20 %

[1] Housing only, without lens and optics protection hood.

Output current	≤ 100 mA
Housing	Aluminum die cast
Housing color	Light blue (RAL 5012)
Window material	Plastic (To be ordered separately as accessories) Glass (To be ordered separately as accessories)
Enclosure rating	IP65 (EN 60529 (1991-10), EN 60529/A2 (2002-02))
Protection class	III
Electrical safety	EN 60950-1 (2011-01)
Weight	635 g
Dimensions (L x W x H)	142 mm x 89 mm x 46 mm [1]

[1] Housing only, without lens and optics protection hood.

Performance

Readable code structures	1D codes, Stacked, 2D codes
Bar code types	GS1-128 / EAN 128, UPC / GTIN / EAN, Interleaved 2 of 5, Pharmacode, GS1 DataBar, Code 39, Code 128, Codabar, Code 32, Code 93, USPS (Postnet, Planet, USPS4SCB), Australian Post, Dutch KIX Post, Royal Mail, Swedish Post
2D code types	Data Matrix ECC200, GS1 Data-Matrix, MaxiCode, QR code
Stacked code types	PDF417
Code qualification	On the basis of ISO/IEC 16022, ISO/IEC 15415, ISO/IEC 18004
Internal image storage	512 MB

Interfaces

Ethernet	✓, TCP/IP
Function	Host, AUX, FTP (image transmission)
Data transmission rate	10/100/1,000 Mbit/s
PROFINET	✓
Function	PROFINET Single Port (integrated), PROFINET Dual Port (optional via external connection module CDF600-2)
EtherNet/IP™	✓
Data transmission rate	10/100/1,000 Mbit/s
Serial	✓, RS-232, RS-422
Function	Host, AUX
Data transmission rate	0.3 kBaud ... 115.2 kBaud
CAN	✓
Function	SICK CAN sensor network CSN (master/slave, multiplexer/server)
Data transmission rate	20 kbit/s ... 1 Mbit/s
PROFIBUS DP	✓
Type of fieldbus integration	Optional over external fieldbus module CDF600-2
Digital inputs	4 ("Sensor 1", "Sensor 2", 2 inputs via optional CMC600 parameter memory in CDB650/CDM420)
Configurable inputs	Encoder input, external trigger
Digital outputs	6 (CDB650: "Result 1", "Result 2", "Result 3", "Result 4", 2 external outputs via CMC600 or CDM420: "Result 1", "Result 2", 2 external outputs via CMC600 or cable with open end: "Result 1", "Result 2", "Result 3", "Result 4")
Configurable outputs	Good read, External illumination control, free configurable output condition, "device ready"

|	
Reading pulse	Digital inputs, non-powered, serial interface, Ethernet, CAN, auto pulse, presentation mode
Optical indicators	21 LEDs (10 x status display, 10 x LED bar graph, 1 green feedback spot)
Acoustic indicators	Beeper/buzzer (can be switched off, can be assigned a function to signal a result)
Control elements	2 buttons (choose and start/stop functions)
Operator interfaces	Web server
Configuration software	SOPAS ET
Memory card	Micro SD memory card (flash card) max. 16 GB, optional
Data storage and retrieval	Image and data storage via microSD memory card and external FTP
Maximum encoder frequency	1 kHz
External illumination control	Via digital output (max. 24 V trigger) or external illumination connection

Ambient data

Electromagnetic compatibility (EMC)	EN 61000-6-2:2005-08 / EN 61000-6-3 (2007-01)
Vibration resistance	EN 60068-2-6:2008-02
Shock resistance	EN 60068-2-6
Ambient operating temperature	0 °C ... +50 °C
Storage temperature	–20 °C ... +70 °C
Permissible relative humidity	90 %, Non-condensing
Ambient light immunity	2,000 lx, on code

Classifications

ECl@ss 5.0	27280103
ECl@ss 5.1.4	27280103
ECl@ss 6.0	27280103
ECl@ss 6.2	27280103
ECl@ss 7.0	27280103
ECl@ss 8.0	27280103
ECl@ss 8.1	27280103
ECl@ss 9.0	27280103
ECl@ss 10.0	27280103
ECl@ss 11.0	27280103
ECl@ss 12.0	27280103
ETIM 5.0	EC002550
ETIM 6.0	EC002550
ETIM 7.0	EC002999
ETIM 8.0	EC002999
UNSPSC 16.0901	43211701

Dimensional drawing (Dimensions in mm (inch))
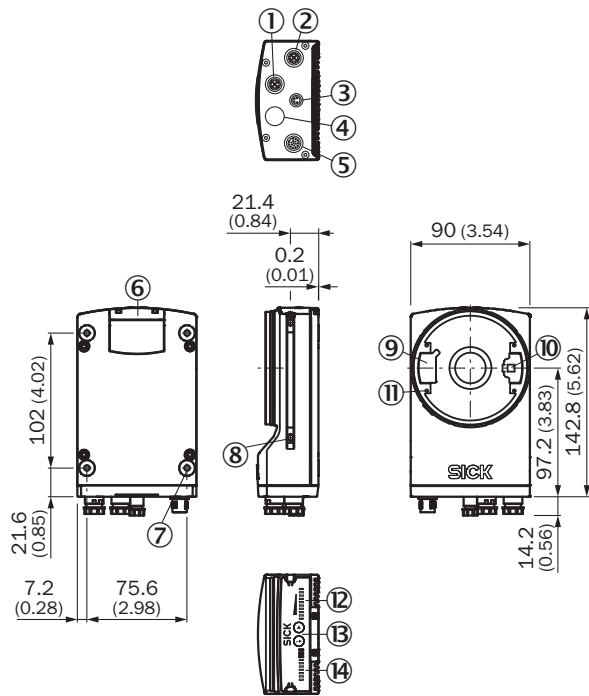
① "Ethernet" P1 connection
② P3 connection "Ethernet"
③ X2 "USB" connection or "trigger external lighting", depending on type
④ P2 connection "CAN OUT", depending on type
⑤ X1 "Power/Serial Data/CAN/I/O" connection or "CAN IN", depending on type
⑥ Cover for the microSD memory card
⑦ M5 blind tapped holes, 5 mm deep (4 x), for mounting the sensor
⑧ Sliding nut M5, 5.5 mm deep (2 x), for mounting (as alternative)
⑨ Plug connector for connecting the integrated lighting
⑩ Laser alignment aid exit
⑪ 2.5 mm blind tapped holes (4 x) for mounting the spacers for the integrable illumination
⑫ Bar graph display
⑬ Function button (2 x)
⑭ LED for status display (2 levels), 10 x

Field of view

Field of view in mm² ①

V2D654R	V2D652R
1,000 x 1,000	1,000 x 500
900 x 900	900 x 450
800 x 800	800 x 400
700 x 700	700 x 350
600 x 600	600 x 300
⑩ 500 x 500	⑨ 500 x 250
400 x 400	400 x 200
300 x 300	300 x 150
200 x 200	200 x 100
100 x 100	100 x 50
0	0

Min. resolution in mm ②

1D code ③	2D code ④
0.7	0.9
0.6	0.8
0.5	0.7
⑥	0.6
0.4	0.5
0.3	0.4
0.2	0.3
	0.2
0.1	0.1

Working distance/focus position in mm ⑤

⑦ ⑧

Legend:
- f = 12 mm
- f = 16 mm
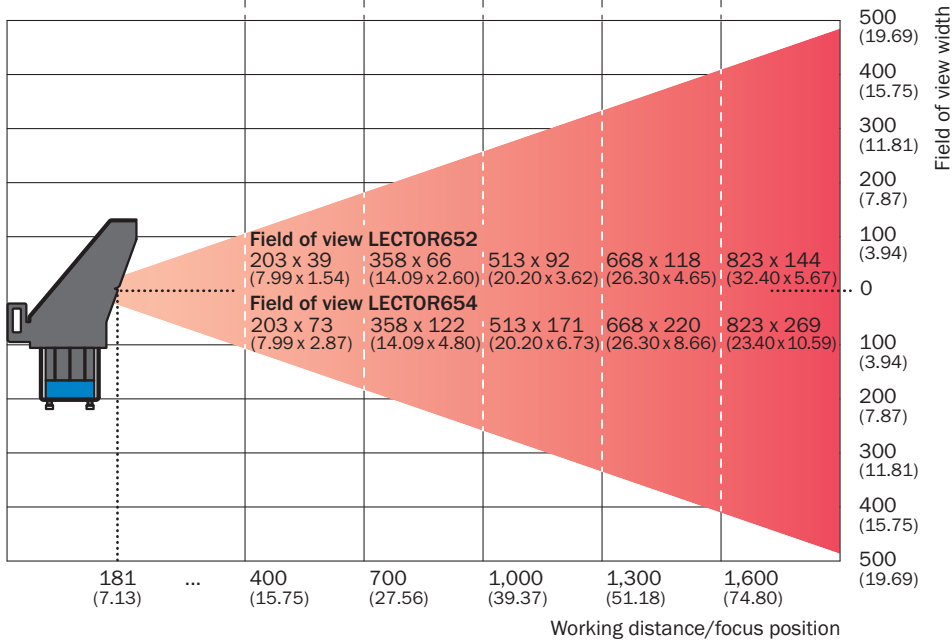- f = 25 mm
- f = 35 mm
- f = 50 mm
- f = 75 mm

① Field of view in mm2
② Minimum resolution in mm
③ 1D code
④ 2D code
⑤ Working distance/Focus position in mm
⑥ Selected code resolution
⑦ Focal length of lens, here example for f = 35.0 mm
⑧ Reading off: resultant maximum working distance
⑨ Reading off: resultant field of view V2D652R (mm x mm)
⑩ Reading off: resultant field of view V2D654R (mm x mm)

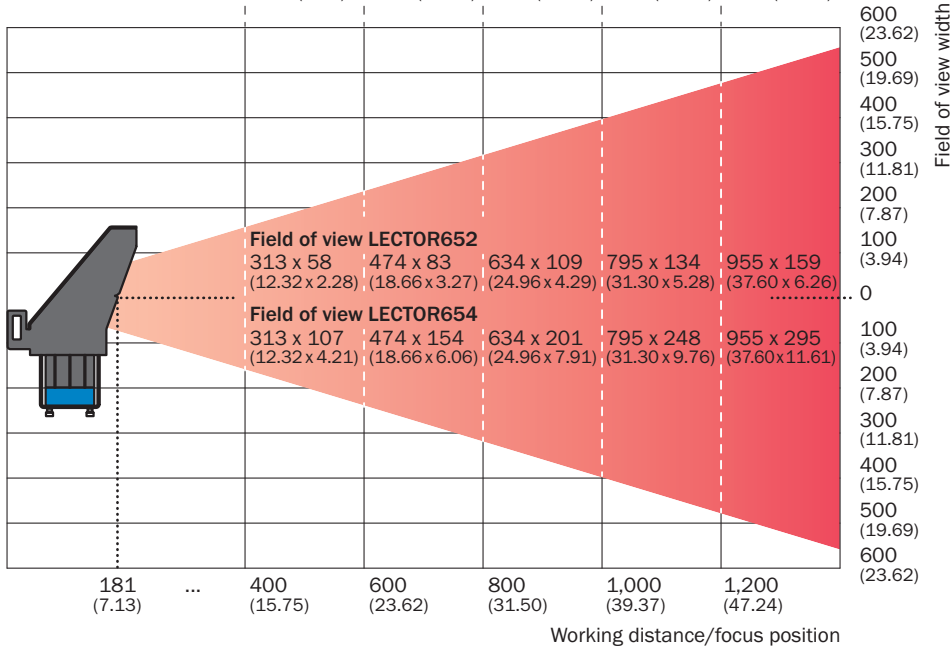Field of view, Lector65x Flex with Panorama 35 mm/40 mm

Dimensions in mm (inch/*mil)

	39 (1.54)	66 (2.60)	92 (3.62)	118 (4.65)	144 (5.67)
Max. code size	39 (1.54)	66 (2.60)	92 (3.62)	118 (4.65)	144 (5.67)
Min. resolution 1D-Code	0.11 (*4.2)	0.18 (*7.0)	0.25 (*9.9)	0.32 (*12.7)	0.39 (*15.5)
Min. resolution 2D-Code	0.14 (*5.6)	0.24 (*9.4)	0.33 (*13.2)	0.43 (*16.9)	0.53 (*20.7)

Field of view LECTOR652
203 x 39 — 358 x 66 — 513 x 92 — 668 x 118 — 823 x 144
(7.99 x 1.54) (14.09 x 2.60) (20.20 x 3.62) (26.30 x 4.65) (32.40 x 5.67)

Field of view LECTOR654
203 x 73 — 358 x 122 — 513 x 171 — 668 x 220 — 823 x 269
(7.99 x 2.87) (14.09 x 4.80) (20.20 x 6.73) (26.30 x 8.66) (23.40 x 10.59)

Field of view width: 500 (19.69), 400 (15.75), 300 (11.81), 200 (7.87), 100 (3.94), 0, 100 (3.94), 200 (7.87), 300 (11.81), 400 (15.75), 500 (19.69)

Working distance/focus position: 181 (7.13) ... 400 (15.75), 700 (27.56), 1,000 (39.37), 1,300 (51.18), 1,600 (74.80)

Field of view Lector65x with Panorama 25 mm

Dimensions in mm (inch/*mil)

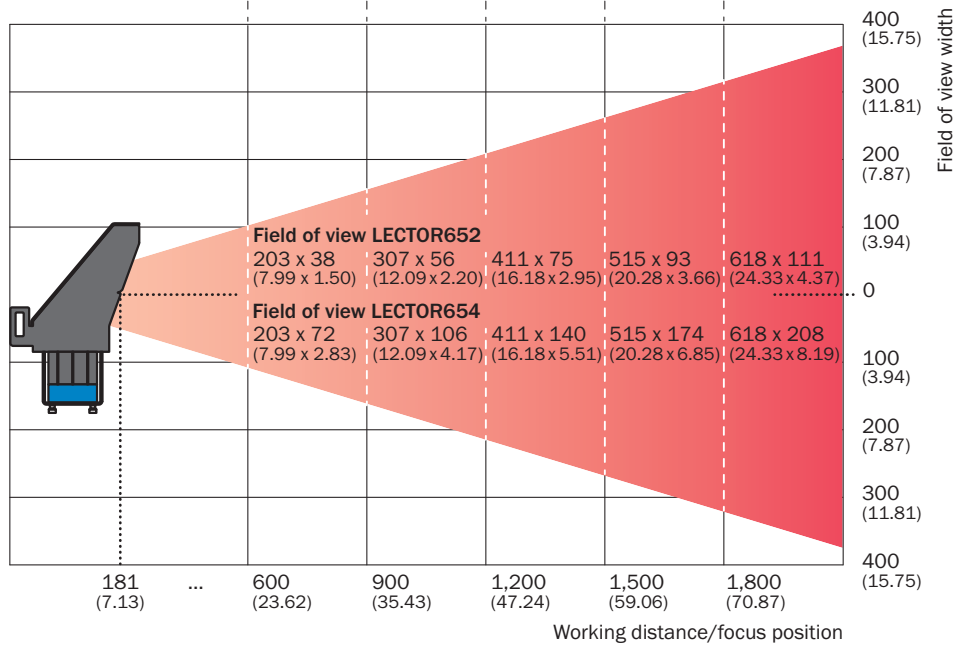|	58 (2.28)	83 (3.27)	108 (4.25)	121 (4.76)	134 (5.28)
Max. code size	58 (2.28)	83 (3.27)	108 (4.25)	121 (4.76)	134 (5.28)
Min. resolution 1D-Code	0.16 (*6.2)	0.23 (*8.9)	0.29 (*11.6)	0.36 (*14.3)	0.43 (*17.0)
Min. resolution 2D-Code	0.21 (*8.2)	0.30 (*11.8)	0.39 (*15.4)	0.48 (*19.1)	0.58 (*22.7)

Field of view LECTOR652
313 x 58 — 474 x 83 — 634 x 109 — 795 x 134 — 955 x 159
(12.32 x 2.28) (18.66 x 3.27) (24.96 x 4.29) (31.30 x 5.28) (37.60 x 6.26)

Field of view LECTOR654
313 x 107 — 474 x 154 — 634 x 201 — 795 x 248 — 955 x 295
(12.32 x 4.21) (18.66 x 6.06) (24.96 x 7.91) (31.30 x 9.76) (37.60 x 11.61)

Field of view width: 600 (23.62), 500 (19.69), 400 (15.75), 300 (11.81), 200 (7.87), 100 (3.94), 0, 100 (3.94), 200 (7.87), 300 (11.81), 400 (15.75), 500 (19.69), 600 (23.62)

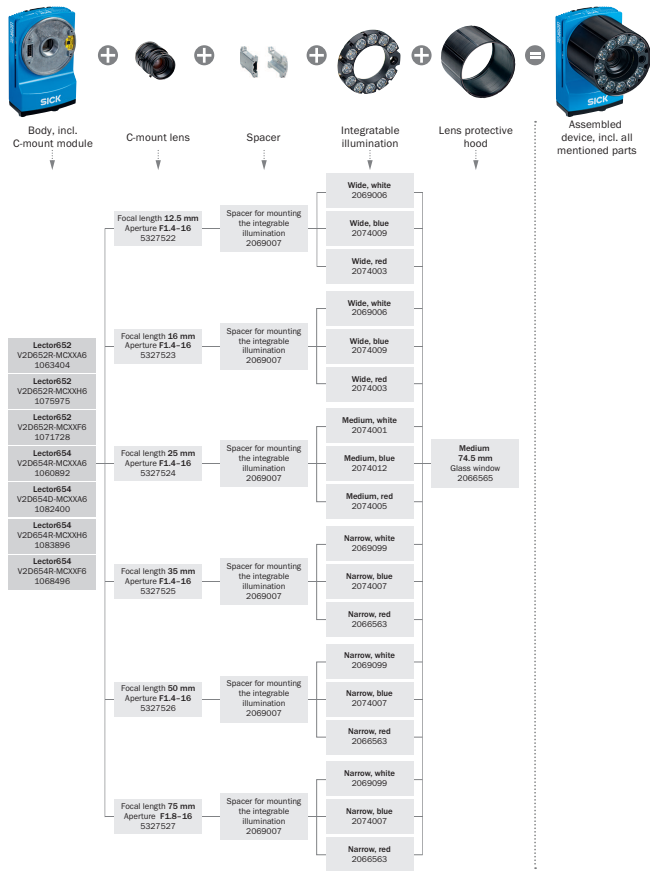Working distance/focus position: 181 (7.13) ... 400 (15.75), 600 (23.62), 800 (31.50), 1,000 (39.37), 1,200 (47.24)

Field of view, Lector65x Flex with Panorama 50 mm

Dimensions in mm (inch/*mil)

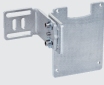|	72 (2.83)	105 (4.13)	133 (5.24)	162 (6.38)	190 (7.48)
Max. code size	72 (2.83)	105 (4.13)	133 (5.24)	162 (6.38)	190 (7.48)
Min. resolution 1D-Code	0.11 (*4.1)	0.16 (*6.1)	0.20 (*8.1)	0.25 (*10.0)	0.30 (*12.0)
Min. resolution 2D-Code	0.14 (*5.5)	0.21 (*8.2)	0.27 (*10.8)	0.34 (*13.4)	0.41 (*16.0)

Field of view LECTOR652

203 x 38	307 x 56	411 x 75	515 x 93	618 x 111
(7.99 x 1.50)	(12.09 x 2.20)	(16.18 x 2.95)	(20.28 x 3.66)	(24.33 x 4.37)

Field of view LECTOR654

203 x 72	307 x 106	411 x 140	515 x 174	618 x 208
(7.99 x 2.83)	(12.09 x 4.17)	(16.18 x 5.51)	(20.28 x 6.85)	(24.33 x 8.19)

Field of view width: 400 (15.75), 300 (11.81), 200 (7.87), 100 (3.94), 0, 100 (3.94), 200 (7.87), 300 (11.81), 400 (15.75)

Working distance/focus position: 181 (7.13) ... 600 (23.62), 900 (35.43), 1,200 (47.24), 1,500 (59.06), 1,800 (70.87)

Selection Guide

Body, incl. C-mount module ➕ C-mount lens ➕ Spacer ➕ Integratable illumination ➕ Lens protective hood ➖ Assembled device, incl. all mentioned parts

Body, incl. C-mount module:

| Lector652 V2D652R-MCXXA6 1063404 |
| Lector652 V2D652R-MCXXH6 1075975 |
| Lector652 V2D652R-MCXXF6 1071728 |
| Lector654 V2D654R-MCXXA6 1060892 |
| Lector654 V2D654D-MCXXA6 1082400 |
| Lector654 V2D654R-MCXXH6 1083896 |
| Lector654 V2D654R-MCXXF6 1068496 |

C-mount lens / Spacer / Integratable illumination / Lens protective hood:

- Focal length **12.5 mm** Aperture F1.4–16 5327522 — Spacer for mounting the integrable illumination 2069007
  - Wide, white 2069006
  - Wide, blue 2074009
  - Wide, red 2074003

- Focal length **16 mm** Aperture F1.4–16 5327523 — Spacer for mounting the integrable illumination 2069007
  - Wide, white 2069006
  - Wide, blue 2074009
  - Wide, red 2074003

- Focal length **25 mm** Aperture F1.4–16 5327524 — Spacer for mounting the integrable illumination 2069007
  - Medium, white 2074001
  - Medium, blue 2074012
  - Medium, red 2074005

  Medium 74.5 mm Glass window 2066565

- Focal length **35 mm** Aperture F1.4–16 5327525 — Spacer for mounting the integrable illumination 2069007
  - Narrow, white 2069099
  - Narrow, blue 2074007
  - Narrow, red 2066563

- Focal length **50 mm** Aperture F1.4–16 5327526 — Spacer for mounting the integrable illumination 2069007
  - Narrow, white 2069099
  - Narrow, blue 2074007
  - Narrow, red 2066563

- Focal length **75 mm** Aperture F1.8–16 5327527 — Spacer for mounting the integrable illumination 2069007
  - Narrow, white 2069099
  - Narrow, blue 2074007
  - Narrow, red 2066563

Recommended accessories

Other models and accessories ➜ www.sick.com/Lector64x_Lector65x

	Brief description	Type	Part no.
Mounting brackets and plates			
	Mounting bracket set consisting of mounting angle, cooling plate and screw including skew angle display	Mounting bracket kit	2069171
Plug connectors and cables			
	Head A: male connector, M12, 8-pin, straight, X-coded Head B: male connector, RJ45, 8-pin, straight Cable: Ethernet, Gigabit Ethernet, PUR, halogen-free, shielded, 2 m	YM2X18-020EG1MRJA8	2106258

Recommended services

Additional services ➜ www.sick.com/Lector64x_Lector65x

	Type	Part no.
Product, system, and software training		
• **Range of services:** The training contents relate to the Lector® series, Training format and location can be worked out in collaboration with SICK	Lector® series training	1612232
Commissioning		
• **Product area:** Image-based code readers • **Range of services:** Inspection of connection, fine adjustment, optimization of parameters of SICK product as well as tests, Set-up of previously defined functions of possible Lector6xx illumination, code configuration, trigger and digital inputs, interfaces and digital outputs as well as data processing • **Travel expenses:** The prices do not include travel costs such as hotel, flight, travel time and expenses. • **Duration:** Additional work will be invoiced separately	Commissioning Lector6xx	1608206
Maintenance		
• **Product area:** Image-based code readers • **Range of services:** Inspection, analysis and restoring of defined functions, Inspection and adaptation of previously defined functions of possible Lector6xx illumination, code configuration, trigger and digital inputs, interfaces and digital outputs as well as data processing • **Duration:** Additional work will be invoiced separately • **Travel expenses:** The prices do not include travel costs such as hotel, flight, travel time and expenses.	Maintenance Lector6xx	1611421
Performance check		
• **Product area:** Image-based code readers • **Range of services:** Inspection of defined functions, e.g., reading performance • **Travel expenses:** The prices do not include travel costs such as hotel, flight, travel time and expenses. • **Duration:** Additional work will be invoiced separately	Performance check Lector6xx	1608207
Warranty extensions		
• **Product area:** Identification solutions, machine vision, Distance sensors, Detection and ranging solutions • **Range of services:** The services correspond to the scope of the statutory manufacturer warranty (SICK general terms and conditions of purchase) • **Duration:** Five-year warranty from delivery date.	Extended warranty for a total of five years from delivery date	1680671
Service agreements		
• **Product area:** Robot guidance systems, Track and trace systems, Driver assistance systems, Object detection systems, Profiling systems, Gateway systems, Quality control systems • **Range of services:** Maintenance, Troubleshooting, Warranty extensions, 8/5 remote support, 8/5 help desk • **Duration:** Duration is arranged individually with the customer and defined in the contract	Bronze service agreements for Systems	1616164

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

WORLDWIDE PRESENCE:

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