Sick ICR620S-T16503

Sick ICR620S-T16503 Image-Based Code Reader User Manual

Model: ICR620S-T16503

1. Introduction

This manual provides essential information for the proper installation, operation, and maintenance of the Sick ICR620S-T16503 Image-Based Code Reader. Please read this manual thoroughly before using the device to ensure safe and efficient operation.

The Sick ICR620S-T16503 is a professional 2D vision image-based code reader designed for industrial applications. It features a CMOS matrix sensor and advanced image processing capabilities for reliable code identification.

2. Product Overview

The ICR620S-T16503 is equipped with the following key features:

- **Auto-Focus Function:** Enables automatic adjustment of focus for varying reading distances.
- **CMOS Matrix Sensor:** High-resolution sensor for capturing detailed images.
- **Infrared Illumination:** Invisible infrared light (λ = 850 ± 25 nm) for robust reading in various conditions.
- **Visible Feedback Point:** Green light (λ = 525 ± 15 nm) for operational status indication.
- **Aiming Laser:** Red visible light (λ = 630 ... 680 nm) for precise targeting.
- **Wide Reading Distance:** Capable of reading codes from 40 mm to 1500 mm.



Figure 2.1: The Sick ICR620S-T16503 Image-Based Code Reader in its original packaging. The box displays the model number and SICK branding.



Figure 2.2: A close-up view of the product label on the Sick ICR620S-T16503 packaging, showing the model number, part number (1 058 623), CE mark, and software version V2.10.

3. Setup and Installation

This section details the steps required to set up and install your Sick ICR620S-T16503 code reader.

3.1 Unpacking

Carefully remove the device from its packaging. Inspect the contents for any signs of damage. The package should contain the ICR620S-T16503 unit and any accompanying documentation.

3.2 Mounting

The device can be mounted using the M5 blind tapped holes (5 mm deep, 4x) on the sensor. Refer to the dimensional drawing for precise mounting hole locations.



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Ordering information

Type	Part no.
ICR620S-T16503 Professional	1059623

Other models and accessories →

Detailed technical data

Features

Focus	Teach auto focus
Sensor	CMOS matrix sensor, grayscale values
Sensor resolution	752 px x 480 px (WVGA)
Internal lighting	Infrared
Light source	Illumination LEDs: invisible infrared light (λ = 850 ± 25 nm) Feedback spot: visible green light (λ = 525 ± 15 nm) Aiming laser: visible red light (λ = 630 ... 680 nm)
LED class	0 (IEC 62471:2006-07, EN 62471:2008-09)
Laser class	1, complies with 21 CFR 1040.10 except for the tolerance according to "Laser Notice No. 50" from June 24, 2007 (IEC 60825-1:2014) EN 60825-1:2014
Scanning frequency	80 Hz, WVGA resolution
Code resolution	≥ 0.1 mm [1]
Reading distance	40 mm ... 1,500 mm [2] [3]
Lens	Integrated
Focal length	7 mm

[1] Valid for Data Matrix, PDF417, and 1D codes with good print quality

[2] For details see reading field diagram

Mechanics/electronics

Electrical connection	3 x M12, 17-pin male connector 3 x M12, 4-pin Ethernet female connector Circular plug-in connector
Supply voltage	10 V DC ... 30 V DC

[3] Swivel connector is 17.8 mm longer.

Figure 3.1: Technical data sheet for the Sick ICR620S-T16503, showing ordering information, features, and detailed technical data including focus, sensor resolution, and internal lighting specifications.



Power consumption	Typ. 3 W
Output current	≤ 100 mA
Housing	Aluminum die cast
Housing color	Light blue (RAL 5012)
Enclosure rating	IP65 (EN 60529 (1991-10), EN 60529/A2 (2002-02))
Protection class	III
Electrical safety	EN 60950-1 (2006-04) / EN 60950-1/A11 (2009-03)
Weight	170 g
Dimensions (L x W x H)	71 mm x 43 mm x 35.6 mm [1]
MTBF	75,000 h

[1] Swivel connector is 17.8 mm longer.

Performance

Readable code structures	1D, Stacked, 2D
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
2D code types	Data Matrix ECC200, GS1 Data Matrix, PDF417, PDF417 Truncated, QR code
Code qualification	On the basis of ISO/IEC 16022, ISO/IEC 15415, ISO/IEC 15416, ISO/IEC 18004
No. of codes per reading interval	1 ... 50
No. of characters per reading interval	500 (for multiplexer function in CAN operation)
Internal image storage	135 MB
Transport speed	4 m/s

Interfaces

Ethernet	✓, TCP/IP
Function	Host, AUX, OPC DA Server, FTP (image transmission)
Data transmission rate	10/100 MBit/s
PROFINET	✓
Function	PROFINET Single Port, PROFINET Dual Port (optional via external connection module CDF600-2)
Data transmission rate	10/100 MBit/s
EtherNet/IP™	✓
Data transmission rate	10/100 MBit/s
EtherCAT®	✓
Type of fieldbus integration	Optional over external fieldbus module CDF600
Serial	✓, RS-232, RS-422
Function	Host, AUX
Data transmission rate	0.3 kBaud ... 115.2 kBaud, AUX: 57.6 kBaud (RS-232)
CAN	✓
Function	SICK CAN sensor network CSN (master/slave, multiplexer/server)
Data transmission rate	20 kbit/s ... 1 Mbit/s
CANopen	✓
Data transmission rate	20 kbit/s ... 1 Mbit/s
PROFIBUS DP	✓

Figure 3.2: Continuation of the technical data sheet, detailing performance characteristics such as power consumption, output current, housing material, and readable code structures (1D, 2D, and 3D codes).

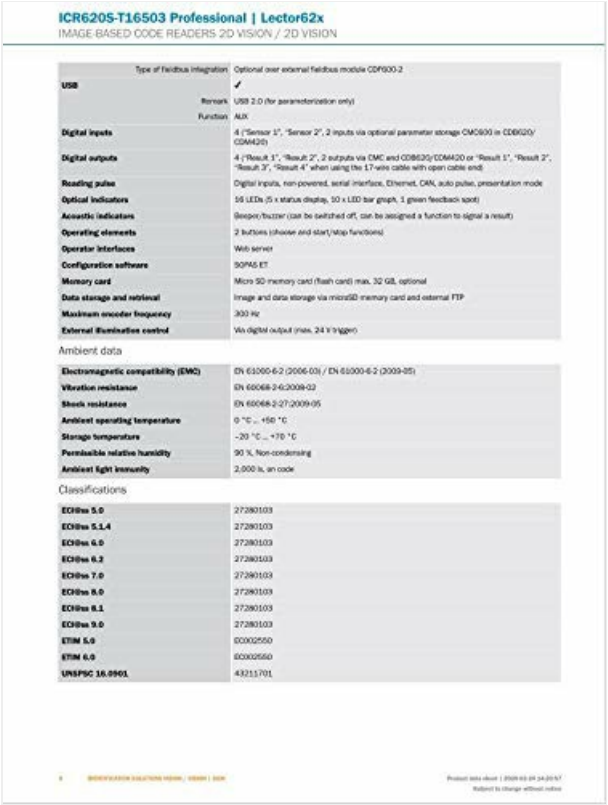
3.3 Electrical Connection

The ICR620S-T16503 offers various connection options:

- 3 x M12, 17-pin male connector
- 3 x M12, 4-pin Ethernet female connector

- Circular plug-in connector

Supply voltage: 10 V DC ... 30 V DC.



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Type of fieldbus integration	Optional over external fieldbus module CDF600-2
USB	✓
Remark	USB 2.0 (for parameterization only)
Function	AUX
Digital inputs	4 ("Sensor 1", "Sensor 2", 2 inputs via optional parameter storage CMC600 in CDB(2)/CDM420)
Digital outputs	4 ("Result 1", "Result 2", 2 outputs via CMC and CDB(2)/CDM420 or "Result 1", "Result 2", "Result 3", "Result 4" when using the 17-wire cable with open cable end)
Reading pulse	Digital inputs, non-powered, serial interface, Ethernet, CAN, auto pulse, presentation mode
Optical indicators	16 LEDs (5 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)
Operating 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. 32 GB, optional
Data storage and retrieval	Image and data storage via microSD memory card and external FTP
Maximum encoder frequency	300 Hz
External illumination control	Via digital output (max. 24 V trigger)

Ambient data

Electromagnetic compatibility (EMC)	EN 61000-6-2 (2006-03) / EN 61000-6-2 (2009-08)
Vibration resistance	EN 60068-2-6:2008-02
Shock resistance	EN 60068-2-27:2009-05
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, an 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
ETIM 5.0	EC002550
ETIM 6.0	EC002550
UNSPSC 16.0901	43211701

Figure 3.3: Further technical data, including USB integration, digital inputs/outputs, optical indicators, operating elements, configuration software, memory card details, and ambient data specifications.

3.4 Software Configuration

The device is configured using SOPAS ET software. A Micro SD memory card (flash card) with max. 32 GB is supported for data storage and retrieval.

4. Operating Instructions

This section outlines the basic operation of the Sick ICR620S-T16503.

4.1 Power On/Off

Connect the device to a compatible power supply (10 V DC ... 30 V DC). The device will power on automatically. Use the configured operating elements or software to initiate or stop functions.

4.2 Code Reading

Position the code reader within the specified reading distance of 40 mm to 1500 mm from the target code. The auto-focus function will adjust the lens for optimal reading. The aiming laser assists in precise targeting.

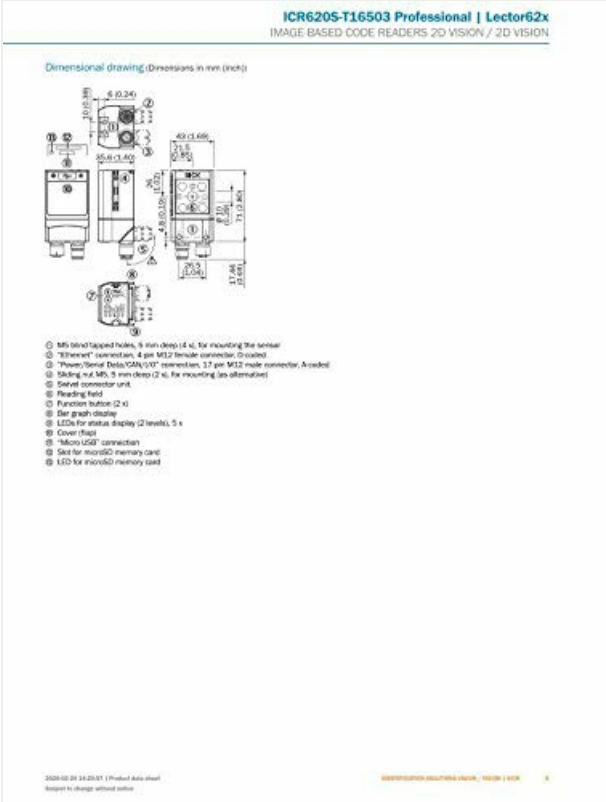


Figure 4.1: Dimensional drawing of the Sick ICR620S-T16503, showing various views and measurements in millimeters and inches, along with connection points and indicator locations.

4.3 Feedback and Indicators

The device provides visual feedback:

- **Green Feedback Point:** Indicates successful operation or status.
- **Optical Indicators:** 14 LEDs (5 x status display, 10 x LED bar graph, 1 green feedback spot) provide detailed status information.

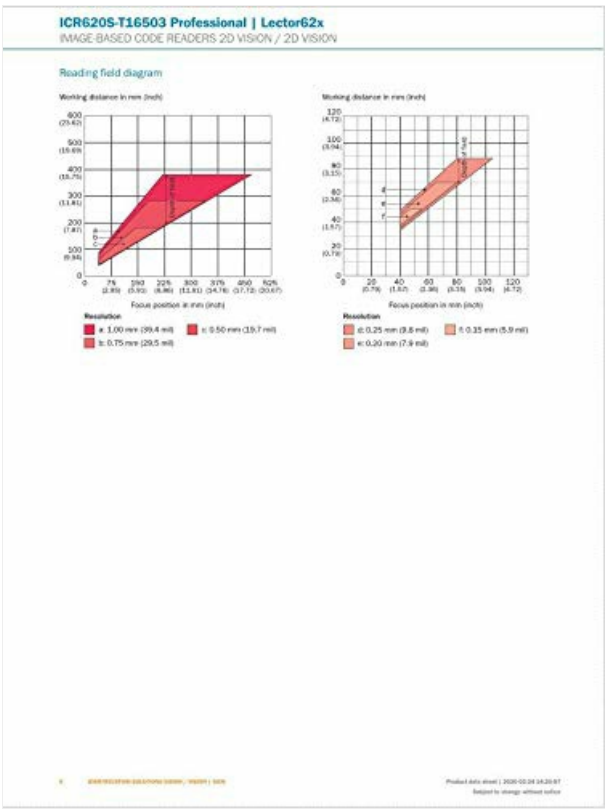


Figure 4.2: Reading field diagrams for the Sick ICR620S-T16503, illustrating the working distance in millimeters and inches relative to focus

position and code resolution.

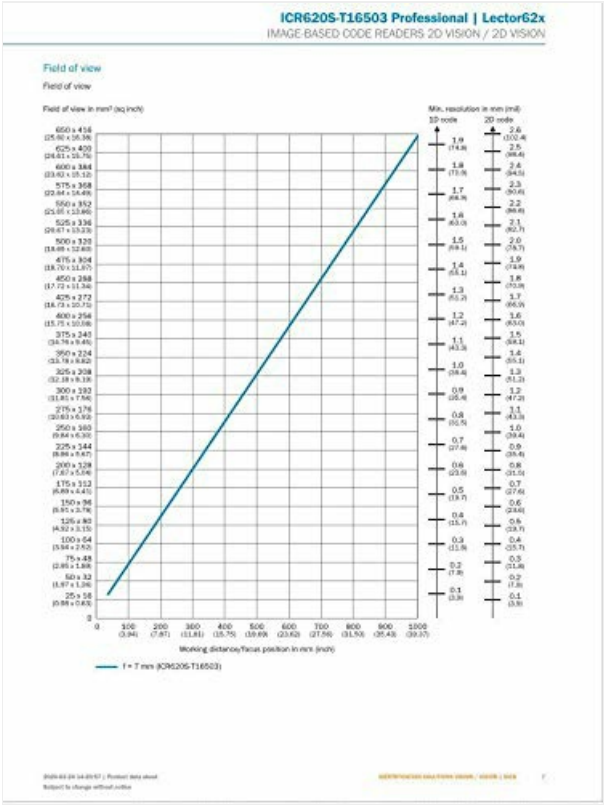


Figure 4.3: Field of view diagram for the Sick ICR620S-T16503, showing the relationship between working distance/focus position and the field of view in square millimeters (square inches) and minimum resolution.

5. Maintenance

Regular maintenance ensures the longevity and optimal performance of your ICR620S-T16503.

5.1 Cleaning

Keep the lens and housing clean. Use a soft, lint-free cloth for cleaning. For stubborn dirt, a mild cleaning solution suitable for optical surfaces may be used. Avoid abrasive materials or harsh chemicals.

5.2 Firmware Updates

Periodically check the manufacturer's website for firmware updates. Updates can improve performance, add features, or resolve issues. Follow the instructions provided with the firmware update package carefully.

6. Troubleshooting

This section provides solutions to common issues you might encounter.

6.1 Device Not Powering On

- **Check Power Connection:** Ensure the power cable is securely connected and the power supply is active and within the specified voltage range (10 V DC ... 30 V DC).
- **Inspect Cables:** Look for any visible damage to the power cable or connectors.

6.2 Unable to Read Codes

- **Verify Reading Distance:** Ensure the code is within the 40 mm to 1500 mm reading range.
- **Check Code Quality:** Ensure the code is clear, undamaged, and has sufficient contrast.
- **Clean Lens:** A dirty lens can impair reading performance. Refer to the cleaning instructions in Section 5.1.

- **Software Configuration:** Confirm that the device is correctly configured for the type of code being read using SOPAS ET software.

6.3 Communication Issues

- **Check Network Cables:** Ensure Ethernet or other communication cables are properly connected.
- **Network Settings:** Verify network settings in SOPAS ET software match your network configuration.

7. Technical Specifications

Feature	Specification
Model Number	ICR620S-T16503
Sensor	CMOS Matrix Sensor, grayscale values
Sensor Resolution	752 px x 480 px (WVGA)
Internal Illumination	Infrared (λ = 850 ± 25 nm)
Feedback Point	Visible green light (λ = 525 ± 15 nm)
Aiming Laser	Visible red light (λ = 630 ... 680 nm)
Laser Class	1 (IEC 60825-1:2014)
Scanning Frequency	60 Hz (WVGA resolution)
Code Resolution	≥ 0.1 mm
Reading Distance	40 mm ... 1500 mm
Lens	Integrated, Focal length: 7 mm
Supply Voltage	10 V DC ... 30 V DC
Power Consumption	Typ. 3 W
Weight	170 g
Dimensions (L x W x H)	71 mm x 43 mm x 35.6 mm^3
Enclosure Rating	IP65 (EN 60529 (1991), EN 60529/A2 (2002-02))
Operating Temperature	0 °C ... +50 °C
Storage Temperature	-20 °C ... +70 °C

8. Warranty Information

For detailed warranty terms and conditions, please refer to the official Sick website or contact your local Sick representative. The product is typically covered by a manufacturer's warranty against defects in materials and workmanship under normal use.
Note: The product was listed as new and unused in factory packaging. Packaging may show traces of storage.

9. Support and Contact

If you require technical assistance, have questions about the product, or need to report an issue, please contact Sick customer support through their official website or the contact information provided with your purchase.

Manufacturer: Sick

Model Number: ICR620S-T16503

ASIN: B085XC3JZJ

For additional resources, visit the Official Sick Website.

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Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question