

## CS Series Data Sheet

**PN: 202209033, Model: C6-S7-2040-CS-21-53-90-SX-1G-405-3R**



The CS sensor series sets new standards in 3D laser triangulation technology with resolutions of up to 4096 pixels, profile frequencies of up to 162 kHz and fields of view of 7 to 1300 mm. These robust sensors with protection class IP67 and M12 connections for a reliable power supply and data transmission are available in various housing sizes. Integration is straightforward and takes place via standard interfaces such as Gigabit Ethernet or GenICam. The CS series thus offers a powerful, maintenance-free solution for OEM customers and end users in demanding industrial environments.

- **Highly standardized, factory-calibrated 3D sensors**
- **Large selection of models with X-FOV 7 - 1290 mm**
- **Four different sensor resolutions available (1280, 2040, 3070, 4090)**
- **High industrial protection class IP67 Available with different laser classes and wavelengths**



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Model Information

|                      |                                     |
|----------------------|-------------------------------------|
| Model Name           | C6-S7-2040-CS-21-53-90-SX-1G-405-3R |
| Part Number          | 202209033                           |
| Sensor configuration | Single                              |

Detector/Performance specifications

|                           |                               |
|---------------------------|-------------------------------|
| Detector                  | CMOS   Global Shutter         |
| Resolution                | 2048 x 1088 pixels            |
| Physical size             | 11.264 x 5.984 mm             |
| Pixel size                | 5.5 x 5.5 µm                  |
| Points per profile        | 2048                          |
| Profile speed at 200 rows | 1818.0 Hz                     |
| Maximum profile speed     | 43478.0 Hz                    |
| Linearity Z-Axis          | 0.012 % of calibrated Z-Range |

X Field of View

|              | Nominal | Near Field | Far Field |
|--------------|---------|------------|-----------|
| Scan Width   | 52.5 mm | 41.7 mm    | 62.1 mm   |
| X-Resolution | 25.6 µm | 20.4 µm    | 30.3 µm   |
| Z-Resolution | 1.0 µm  | -          | -         |

Z Field of View

|         | Full    | Near Field | Far Field |
|---------|---------|------------|-----------|
| Z-Range | 46.0 mm | 23.0 mm    | 23.0 mm   |

Laser/Geometry specifications

|                     |          |
|---------------------|----------|
| Working Distance    | 90.0 mm  |
| Triangulation Angle | 21.0 °   |
| Laser Safety Class  | 3R       |
| Laser Wavelength    | 405.0 nm |
| Laser Output Power  | 25.0 mW  |
| Laser Line Width    | 41.0 µm  |

Interface specifications

|                 |                                           |
|-----------------|-------------------------------------------|
| Ethernet        | Gigabit-Ethernet   1.000 Mbit/s           |
| Encoder         | A+, A-, B+, B-, Z+, Z-   RS-422   TTL     |
| Digital inputs  | 2x isolated digital inputs   5V - 24V DC  |
| Digital outputs | 2x isolated digital outputs   5V - 24V DC |

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Electrical/Mechanical specifications

|                        |                                                                                |
|------------------------|--------------------------------------------------------------------------------|
| Sensor power supply    | 12V - 24V DC   27V DC Max.                                                     |
| Power consumption      | - W                                                                            |
| Laser power supply     | 12V - 24V DC                                                                   |
| Connectors             | Power&I/O: M12-Connector   17-pin<br>Ethernet: M12-Connector   8-pin   A-coded |
| Housing material       | Anodized aluminum                                                              |
| Dimensions (L x W x H) | 109.9 x 43.0 x 85.1 mm                                                         |
| Weight                 | 760.0 g                                                                        |

Environmental conditions

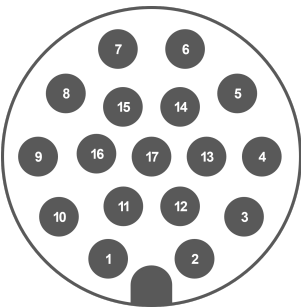
|                      |                                                                                                                       |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Temperatures         | Operating: 0 °C - +40 °C<br>Storage: -20 °C - +80 °C                                                                  |
| Humidity             | 20 % - 80 % (non-condensing)                                                                                          |
| Vibration resistance | Sinusoidal: DIN EN 60068-2-6:2008-10: 2 g   10 Hz - 150 Hz<br>Random: DIN EN 60068-2-64:2020-09: 7 g   10 Hz - 500 Hz |
| Shock resistance     | DIN EN 60068-2-27: 2010-02: 15 g   3 ms                                                                               |
| Protection class     | IP67   According to IEC 60529                                                                                         |

Software/Features

|                     |                                                                                                              |
|---------------------|--------------------------------------------------------------------------------------------------------------|
| Supported standards | GenlCam   GigEVision                                                                                         |
| Firmware features   | RegionTracking   RegionSearch   MultiRegion   MultiPart   AutoStart   HistoryBuffer   MultiSlope   MultiPeak |
| Software            | SolutionPackage   MetrologyPackage   cxSDK with wrappers for C, C++, Python and Matlab                       |

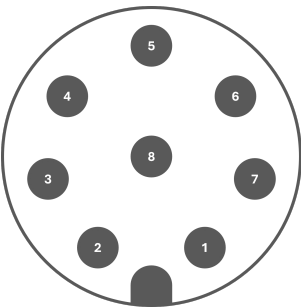
Connectors

M12 17-Pin: A-Coded Male Connector



|        |              |
|--------|--------------|
| 1      | ENC_Z-       |
| 2      | LASER_Supply |
| 3      | ENC_Z+       |
| 4      | ENC_B+       |
| 5      | GND          |
| 6      | ENC_B-       |
| 7      | ENC_A-       |
| 8      | VCC_EXT      |
| 9      | GND_EXT      |
| 10     | ENC_A+       |
| 11     | ENC_GND      |
| 12     | OUT2         |
| 13     | IN1          |
| 14     | IN2          |
| 15     | OUT_Supply   |
| 16     | OUT1         |
| 17     | IO_GND       |
| Shield | SHIELD       |

M12 8-Pin: A-Coded Female Connector



|        |        |
|--------|--------|
| 1      | BI_DC- |
| 2      | BI_DD+ |
| 3      | BI_DD- |
| 4      | BI_DA- |
| 5      | BI_DB+ |
| 6      | BI_DA+ |
| 7      | BI_DC+ |
| 8      | BI_DB- |
| Shield | SHIELD |

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