XCS Series Data Sheet

PN: 602346200, Model: C7-S8-3070-XCS-28-48-146-DX-5G-405-3R

The new 3D sensors of the XCS series are particularly suitable for high-performance applications in the electronics industry thanks to their enormous precision and extreme speed. The sensors are characterized by an optimized laser with homogeneous thickness along the laser line, which guarantees precise detection of even the smallest structures. This enables high-precision inspection applications with high repeatability, which is ideal for the inspection of ball grid arrays (BGAs), among other things. The innovative clean beam function protects the laser from external interference and ensures a uniform intensity distribution, which further increases reliability. The sensor's dual-head option eliminates occlusions and achieves profile speeds of up to 95 kHz with the 3070-WARP version, speeding up data analysis and increasing efficiency.

- **High precision and repeatability thanks to high-quality laser line projection**
- **Unrivaled optical resolution for electronic inspection (e.g. BGA inspection) with a field of view of up to 53 mm**
- **Highest inspection speed available with 3070 WARP sensor**

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Model Information

Model Name	C7-S8-3070-XCS-28-48-146-DX-5G-405-3R
Part Number	602346200
Sensor configuration	Dual

Detector/Performance specifications

Detector	CMOS | Global Shutter
Resolution	3072 x 1020 pixels
Physical size	20.275 x 6.732 mm
Pixel size	6.6 x 6.6 µm
Points per profile	3072
Profile speed at 200 rows	4798.0 Hz
Maximum profile speed	66489.0 Hz
Linearity Z-Axis	0.051 % of calibrated Z-Range

X Field of View

	Nominal	Near Field	Far Field
Scan Width	47.9 mm	44.5 mm	51.3 mm
X-Resolution	15.6 µm	14.5 µm	16.7 µm
Z-Resolution	0.5 µm	-	-

Z Field of View

	Full	Near Field	Far Field
Z-Range	20.0 mm	10.0 mm	10.0 mm

Laser/Geometry specifications

Working Distance	146.0 mm
Triangulation Angle	28.0 °
Laser Safety Class	3R
Laser Wavelength	405.0 nm
Laser Output Power	80.0 mW
Laser Line Width	21.0 µm

Interface specifications

Ethernet	Gigabit-Ethernet | 1.000 Mbit/s
Encoder	A, B, Z | RS-422 | HTL
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	12 W
Laser power supply	12V - 24V DC
Connectors	Power&I/O: M12-Connector | 17-pin | A-coded Ethernet: M12-Connector | 8-pin | X-coded
Housing material	Anodized aluminum
Dimensions (L x W x H)	274.0 x 60.0 x 113.0 mm
Weight	1750.0 g

Environmental conditions

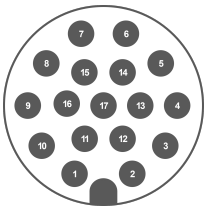
Temperatures	Operating: 0 °C - +40 °C Storage: -20 °C - +80 °C
Humidity	20 % - 80 % (non-condensing)
Vibration resistance	Sinusoidal: DIN EN 60068-2-6:2008-10: 2 g | 10 Hz - 150 Hz Random: DIN EN 60068-2-64:2020-09: 7 g | 10 Hz - 500 Hz
Shock resistance	DIN EN 60068-2-27: 2010-02: 15 g | 3 ms
Protection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

Software/Features

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

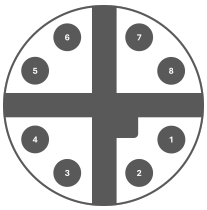
Connector layout and pin assignment

Power & I/O Connector: M12 17-Pin A-Coded Male



1	Z-	Encoder input Z- (RS-422, D-HTL)
2	L-VCC	Laser supply voltage (5-24V DC)
3	Z+	Encoder input Z+ (RS-422, TTL, D/SE-HTL)
4	B+	Encoder input B+ (RS-422, TTL, D/SE-HTL)
5	GND	Sensor and Laser supply ground
6	B-	Encoder input B- (RS-422, D-HTL)
7	A-	Encoder input A- (RS-422, D-HTL)
8	VCC	Sensor supply voltage
9	GND	Sensor and Laser supply ground
10	A+	Encoder input A+ (RS-422, TTL, D/SE-HTL)
11	IN-GND	Reference ground for Encoder/Digital inputs
12	OUT2	Digital output 2, level defined by OUT-VCC
13	IN1	Digital input 1 (5-24V DC)
14	IN2	Digital input 2 (5-24V DC)
15	OUT-VCC	Output supply voltage (5-24V DC), refers to OUT-GND
16	OUT1	Digital output 1, level defined by OUT-VCC
17	OUT-GND	Reference ground for digital outputs
Shield	SHIELD	Connected to device housing

Ethernet Connector: M12 8-Pin X-Coded Female



1	MDI1+	Data Pair 1, positive contact
2	MDI1-	Data Pair 1, negative contact
3	MDI2+	Data Pair 2, positive contact
4	MDI2-	Data Pair 2, negative contact
5	MDI4+	Data Pair 4, positive contact
6	MDI4-	Data Pair 4, negative contact
7	MDI3+	Data Pair 3, positive contact
8	MDI3-	Data Pair 3, negative contact
Shield	SHIELD	Connected to device housing

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