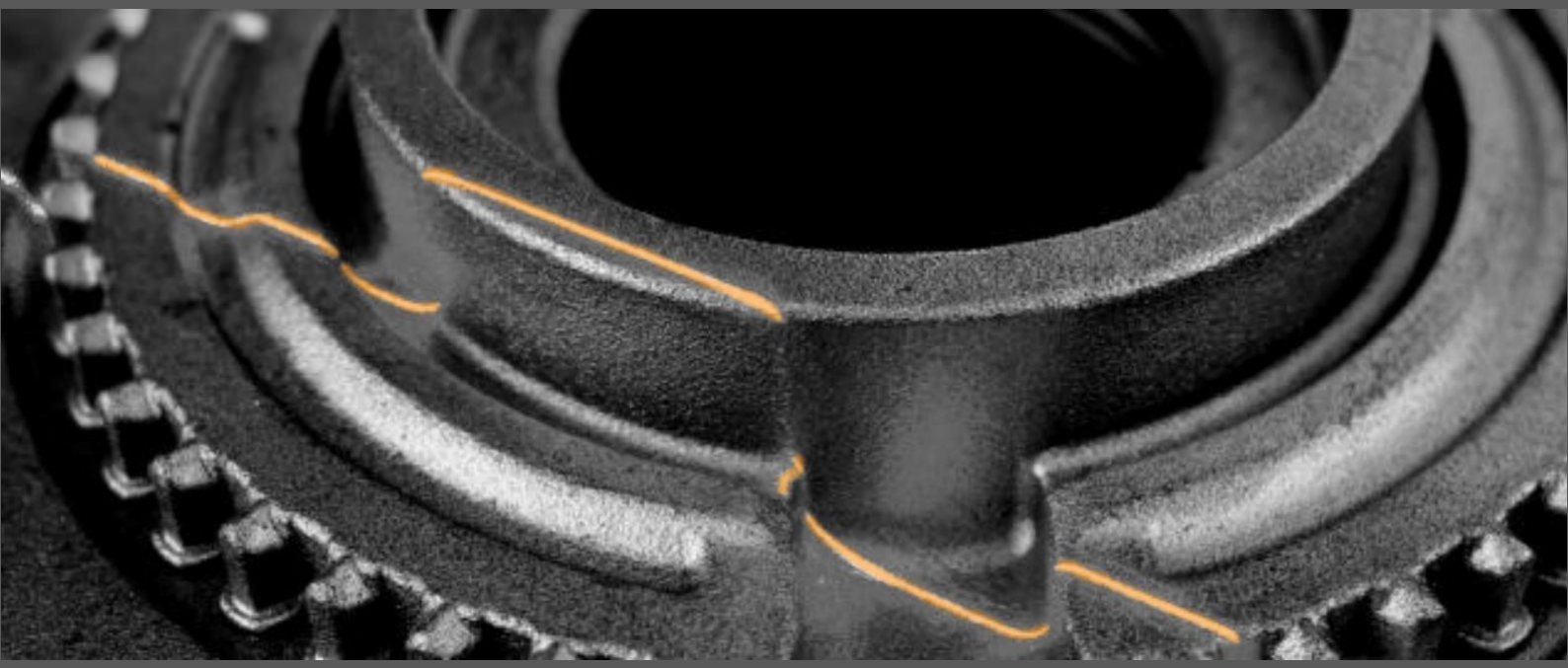


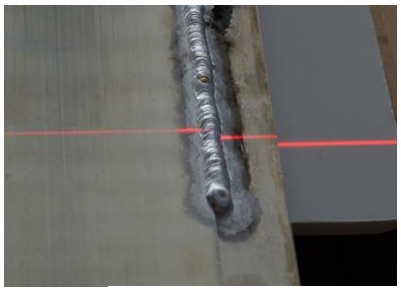
- Triangulation sensor
- Cost-effective system
- Sorting, bin picking, error detection, measuring…
- 4000 Lines per second

Saturn

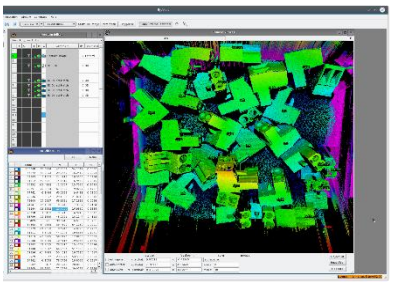
Triangulation sensor

Document release date: 22-06-13

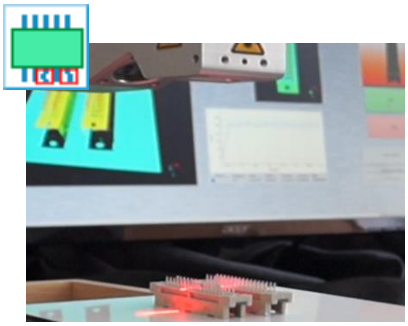
Saturn



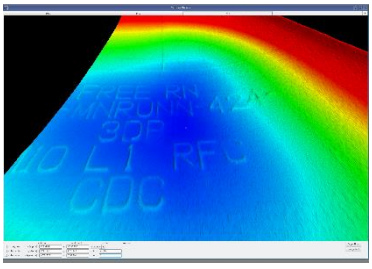
Weld seam inspection



Bin-picking



Pin inspection



Read 3D text

3D Machine Vision solutions are a growing field in **image processing**, more and more applications, which are originally solved in 2D are moved to 3D technology, because this was always the right technology but either not available or too expensive.

The Saturn Series was developed to cover the applications, which are struggling on the price point of the solution. Compared with other systems the Saturn 3D Sensor is a very **cost-effective**, focused on the products where the speed is not mandatory but the price.

Saturn can deliver up to **4000 Lines** of 3D Data per second, with a high accuracy and it's availability with different options in **Laser color** (RED, GREEN, BLUE) and power from 10 mW to 1W, to cover **all kind of material**. The Sensor is available with all Standard Interfaces GigE for Data Transfer and POE, but also with an I/O and additional encoder Interface. For the integration, a SDK or the GenICam Interface is available, for OEM Customer there is the option to use it as smart Sensor, based on a LINUX OS.

Technical Data

Sensor & Laser:

Parameters			
Sensor	Sony IMX273LLR Global Shutter		
Sensor Resolution	1440 x 1080 Pixel		
Sensor Speed	Up to 4000 Hz - 3D Lines per Second		
Sensor ADC Resolution	8 Bit		
Laser Colors	Red	Green	Blue
Laser Power	200 mW	10 mW	80 mW – 1 W
Laser Wavelength	648 nm	520 nm	450 nm

Sensor Data Streams*	
3D Point Cloud / Profile	16 Bit calibrated data
Depth Image	16 Bit data
Intensity Image	16 Bit data
Raw Grayscale Image	8 Bit data

*Data Steams can be combined transmitted

Profile Rate:

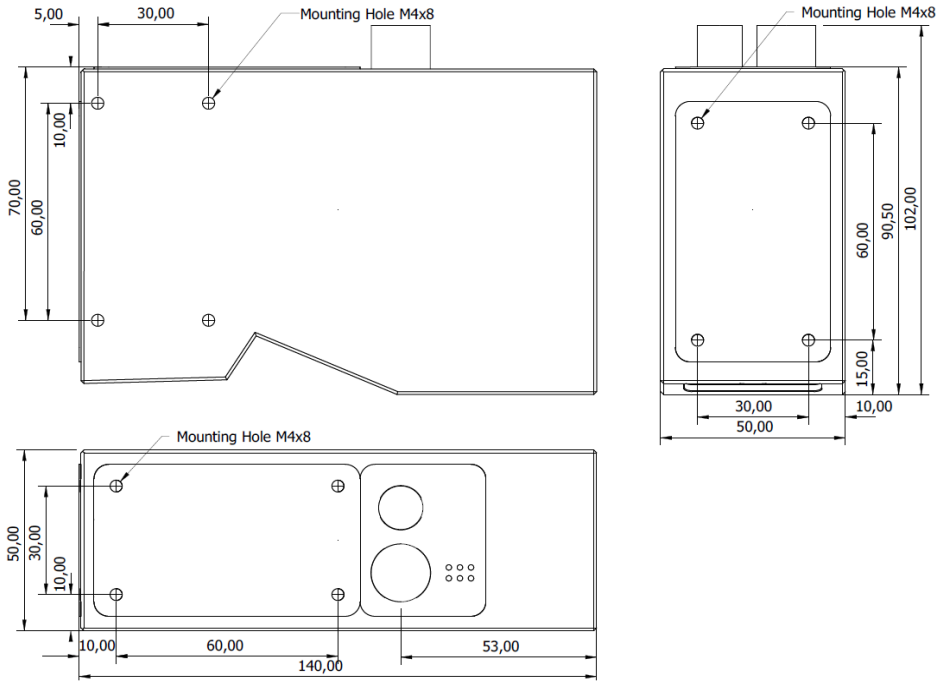
The Profile Rate is estimated by:
PR = 10^6 / ((AOI height + 50) * 4) + (Exposure Time))

AOI Height (Pixel)	Profile Rate (Hz)*
8	4000**
100	1600
500	450
1000	230

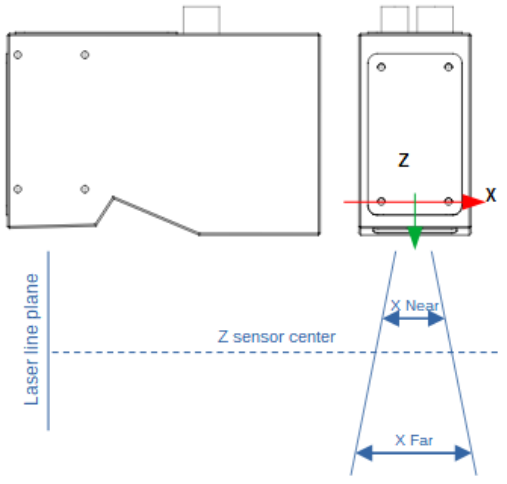
*With 10 us Exposure Time, **Without processing

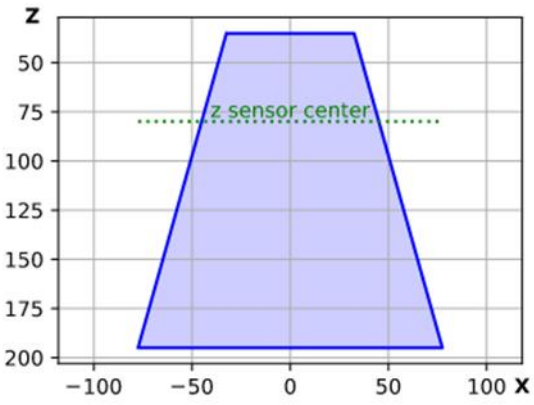
Technical Data

Sensor Dimensions:



Field of View Diagram & Example:





Technical Data

Type	Measuring width X				Working dinstance Z				
	Far	Center	Near	Resolution	Far	Center	Near	Range	Resolution*
		[mm]		[um]		[mm]			[um]
6-23	614	160	96	112	570	106	34	536	64
6-27	382	144	92	100	336	88	26	310	36
6-31	284	132	90	92	236	72	20	216	26
8-19	394	124	76	88	530	132	54	476	56
8-23	248	110	72	78	316	106	46	270	32
8-27	186	98	68	70	222	88	36	186	22
8-31	150	90	66	64	170	72	30	140	18
8-35	130	84	64	60	134	60	22	112	14
12-15	226	94	60	66	478	170	88	390	46
12-19	144	78	54	56	290	132	72	218	26
12-23	110	68	50	48	206	106	60	146	18
12-27	90	62	48	44	158	88	50	108	14
12-31	76	56	46	40	126	72	40	86	10
12-35	68	52	44	38	102	60	32	70	10
16-15	122	68	48	48	342	170	102	240	28
16-19	88	58	42	42	230	132	84	146	18
16-23	70	50	40	36	172	106	70	102	12
16-27	58	44	36	32	134	88	58	76	10
16-31	52	42	34	30	110	72	48	62	8
16-35	46	38	32	28	90	60	38	52	8
25-15	60	42	34	30	258	170	122	136	16
25-19	46	36	30	26	186	132	98	88	12
25-23	38	32	26	24	144	106	80	64	8
25-27	32	28	24	20	114	88	66	48	6
25-31	30	26	22	20	94	72	56	38	6
25-35	26	24	22	18	78	60	46	32	4

Technical Data

General specifications:

System data	
Operating temperature	0 °C to +50 °C (not condensing)
Data interface	M12 GigE M12 I/O isolated Encoder interface (Input 1+2
Data Communication	C/C++ API (Windows, LINUX) GenICam
CPU	Dual Core ARM Cortex A9 with FPGA
Smart Sensor Operation	Optional with Linux

Electrical Ratings		
Power requirement	PWR	12-24V
	PWR I/O	12-24V
Power max. consumption		7 W
Logical high min. Input	Input 1-4	10V
Logical low max. Input	Input 1-4	0.5V
Output current max.	Output 1-4	100mA

Ethernet	
Connector	Phoenix Contact SACC-DSI-FSX-8CON-M16-L180 SCO
Standard IPv4	192.168.1.113
Jumbo Frame Size	3000
PoE	IEEE802.3af compliant

Status LED	
PWR	System Power
IN1	Input 1 signal high
Out1	Output 1 signal high
USR1*	TBD
USR2*	Ready state on
USR3*	Ready state blinking

*) Default Configuration, user changeable

Technical Data

I/O Connector					
Pin	**Signal**	**Color**	**Pin**	**Signal**	**Color**
1	PWR I/O 12-24V	BN	7	GND	BK
2	I/O GND	BU	8	Input 3	GY
3	Input 1	WH	9	PWR 12-24V	RD
4	Input 2	GN	10	Input 4	VT
5	Output 1+	PK	11	Output 3	GYPK
6	Output 2	YE	12	Output 4	RDBU

When PoE is used, Signal 9 with 7 provide 24V output.
Connector Type: Phoenix Contact SACC-DSI-MS-12CON-M12 SCO SH.

Ethernet Connector			
Pin	**Signal**	**Pin**	**Signal**
1	BI_DA_P	5	BI_DC_N
2	BI_DA_N	6	BI_DB_N
3	BI_DB_P	7	BI_DD_P
4	BI_DC_P	8	BI_DD_N

Connector Type: Phoenix Contact SACC-DSI-FSX-8CON-M16-L180 SCO

EVT Eye Vision Technology

Gartenstraße 26

76133 Karlsruhe

Germany

Phone.: +49 (0) 721 668 004 23-0

E-Mail: info@evt-web.com

Web: www.evt-web.com

For more products and applications,
please visit our

EyeCademy
presented by EVT

There you will find exciting videos &
webinars on a variety of topics.