SF332X-10X Family Preliminary Datasheet

2M Pixel Automotive Camera

SEKONIX Corp. Image Solution Team

2Mega LVDS Automotive Camera

SF332X-10X - NVIDIA 2Mega Camera

Written by SEKONIX Image Solution Team _ Rev 2.2

Feature

- 1928 x 1208 Resolution (2.3M Pixel)
- Optical format: 1/2.7-inch
- Pixel size: 3μm x 3μm
- 27MHz clock input
- Analog power supply, from 8V (±10%)
- Ultrahigh resolution Lens
- MAXIM - MAX96705 Serializer
- FAKRA Z – TYPE Connector
- Waterproof – IP69K

Table 1 : Specification Summary

	Parameter	Value		
LENS	Model	NA1962	NA1262	NA6062
	Construction	4G2P	2GM4G	1GM5G
	View angle	V:104° H:190° D:200°	V:73° H:120° D:146°	V:38° H:60° D:70°
Sensor	Model	Onsemi AR0231 (RCCB or RGB)		
	Pixel output interfaces	14-bit parallel		
	Input clock	27Mhz		
Interface	LVDS(PoC)	MAX96705 (MAXIM)		
	Connector	FAKRA Z TYPE		
Module	Data Interface	LVDS 12bit		
	SIZE	26 X 26 X 20.3mm (without optic & cable)		
	Power	8V		
	Optical Axis	± 3 pixel		
	Water Proof	IP69K		
	Operation Temp	-40 ~ 85 ℃		
	Storage Temp	-40 ~ 105℃		

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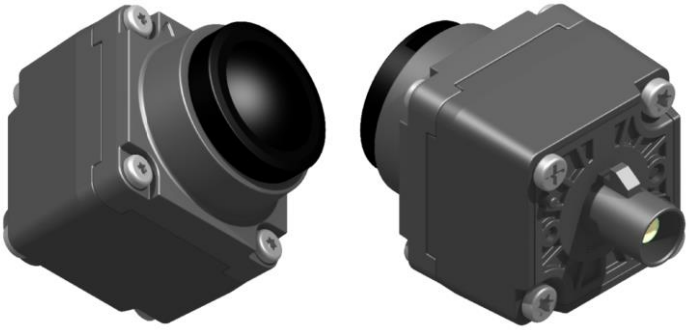
1. Overview

1.1. Description



<PIC 1: SF332X-10X Camera Module >

SF332X-10X series are wide angle cameras, consist of ONSEMI CMOS Image Sensor AR0231 (2M Pixel) and SEKONIX ultra high resolution lens. Image output format is Bayer12 and is able to be changed by user's setting. Connecting interface utilizes MAXIM's MAX96705, and FAKRA Z Type connector is applied to the connecting interface. Aluminum die-casting for its housing is applied to this model. Waterproof function (IP69K) is applied.

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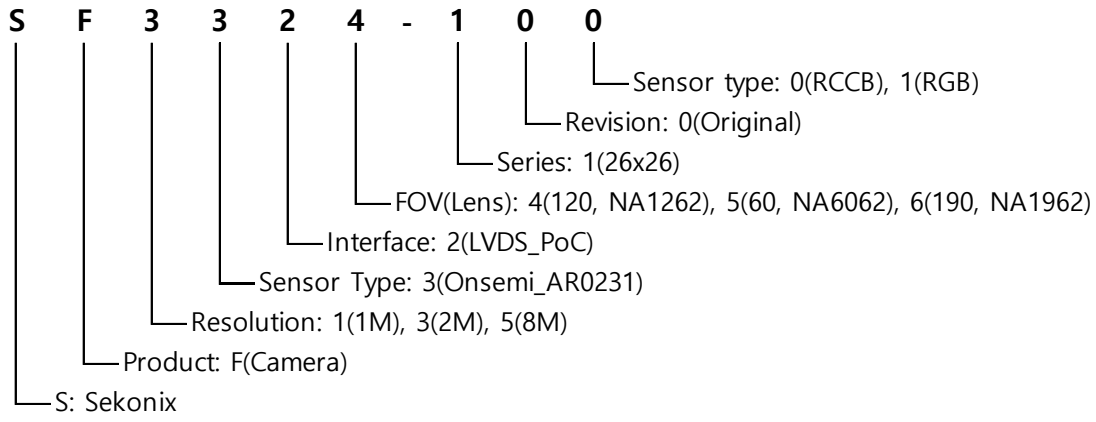
1.2. Ordering information



SF3324-100:Sekonix_Camera_2M_Onsenonly__LVDS(PoC)_120(H)__26x26x2_rev0_RCCB

SF3324-101:Sekonix_Camera_2M_Onsenonly__LVDS(PoC)_120(H)__26x26x2_rev0_RGB

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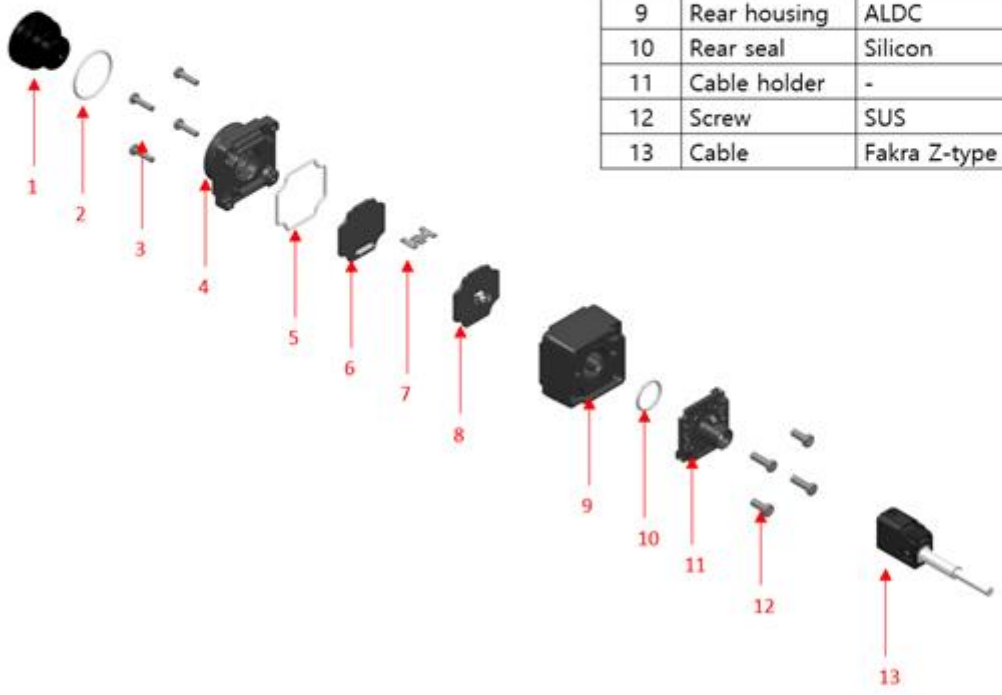
2. Product Composition

2.1. Components

The mechanical parts of SF332X-10X are hard and durable. Moreover, it has powerful performances against heat and water.

SF332X-10X consists of automotive qualified design.

	Part name	Material	U/S
1	Optical lens	-	1
2	Front seal	Silicon	1
3	Screw	SUS	4
4	Front housing	ALDC	1
5	Middle seal	Silicon	1
6	1st PCB	-	1
7	PCB supporter	SUS	1
8	2nd PCB	-	1
9	Rear housing	ALDC	1
10	Rear seal	Silicon	1
11	Cable holder	-	1
12	Screw	SUS	4
13	Cable	Fakra Z-type	1



<PIC 2: Parts tear-down>

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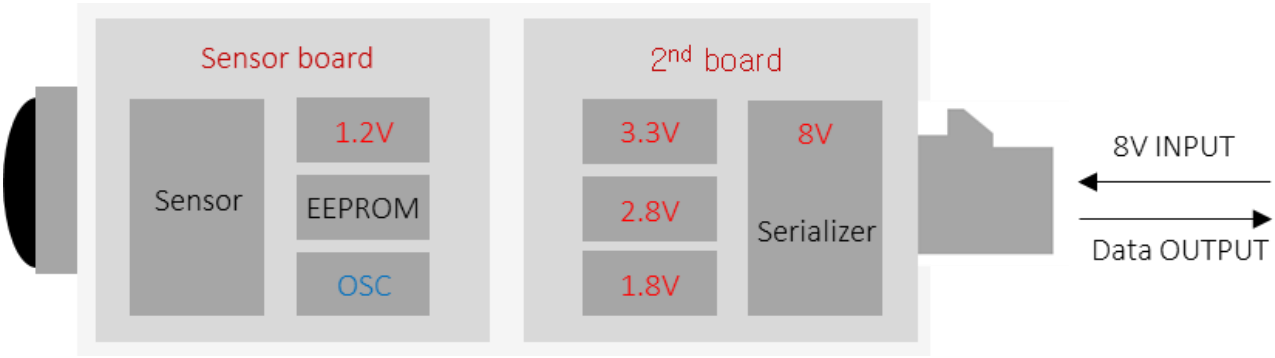
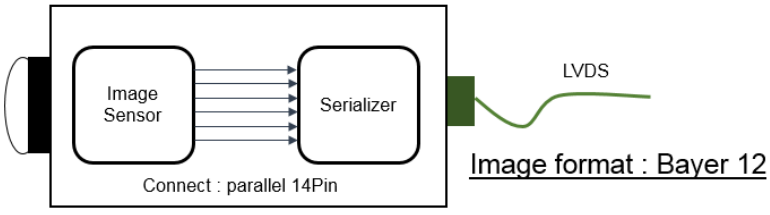
2.2. Block Diagram



<PIC 3: Block diagram>

2.3. Image Data Format

Image Sensor Output sets 14bit but Serializer (MAX96705) support only 12bit. Therefore, it provides 12bit data except top 2bit. And Image format applies Bayer12.



<PIC 4: data format >

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3. Specification

3.1 Lens Specification

● NA6062 - FOV 60 Lens

The lens of SF3325-10X designed and made by Sekonix – NA6062.

The NA6062lens designed and optimized for best performance with ONSEMI AR0231 sensor.

Furthermore, it targets to meet automotive qualification.

<PIC 5 : NA6062>

Model Name	SEKONIX NA6062 -
Grade	1 / 2.7” 2Mega
Viewing Angle	H : 60°, V : 38°, D : 70°
MTF	TBD
IR CUT wavelength	700 ± 10nm
Mount Dimension	M12 x 0.5P

● NA1262 - FOV 120 Lens

The lens of SF3324-10X designed and made by Sekonix – NA1262.

The NA1262lens designed and optimized for best performance with ONSEMI AR0231 sensor.

Furthermore, it targets to meet automotive qualification.

<PIC 7 : NA1262>

Model Name	SEKONIX NA1262
Grade	1 / 2.7” 2Mega
Viewing Angle	H : 120° , V : 73°, D : 146°,
MTF	TBD
IR CUT wavelength	700 ± 10nm
Mount Dimension	M12 x 0.5P

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NA1962 - FOV 190 Lens

The lens of SF3326-10X designed and made by Sekonix fisheye lens - NA1962.

The NA1962lens designed and optimized for best performance with ONSEMI AR0231 sensor.

Furthermore, it targets to meet automotive qualification.

<PIC 9 : NA1962>

Model Name	SEKONIX NA1962
Grade	1 / 2.7” Mega
Viewing Angle	V :104°, H : 190°, D : 200°
MTF	TBD
IR CUT wavelength	700 ± 10nm
Mount Dimension	M12 x 0.5P

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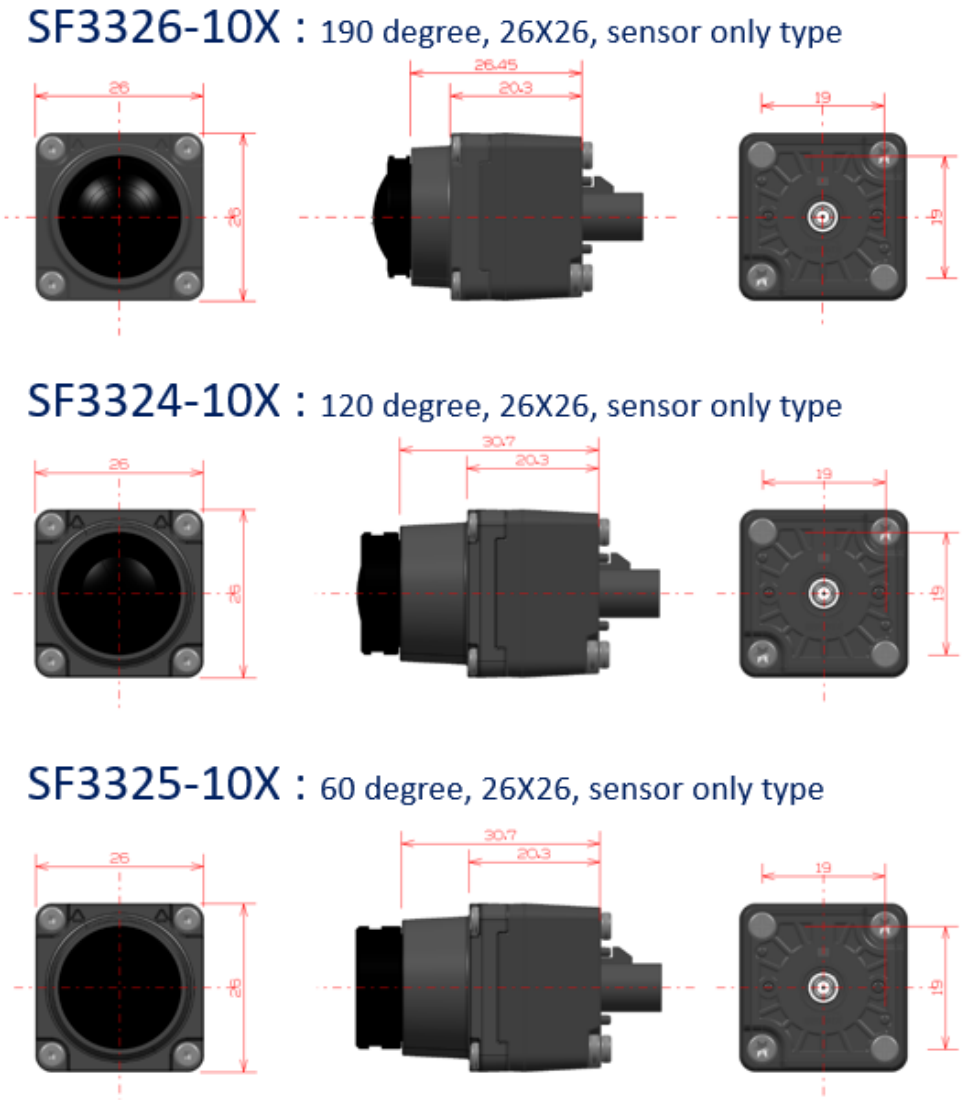
4. Mechanical

4.1 Module dimension

Compact design for the vehicle mounting. Metal housing for enhanced heat prevention and duration. Rear body is integral with FAKRA Z type connector without pigtail Cable



<PIC 11 : Dimension & shape>

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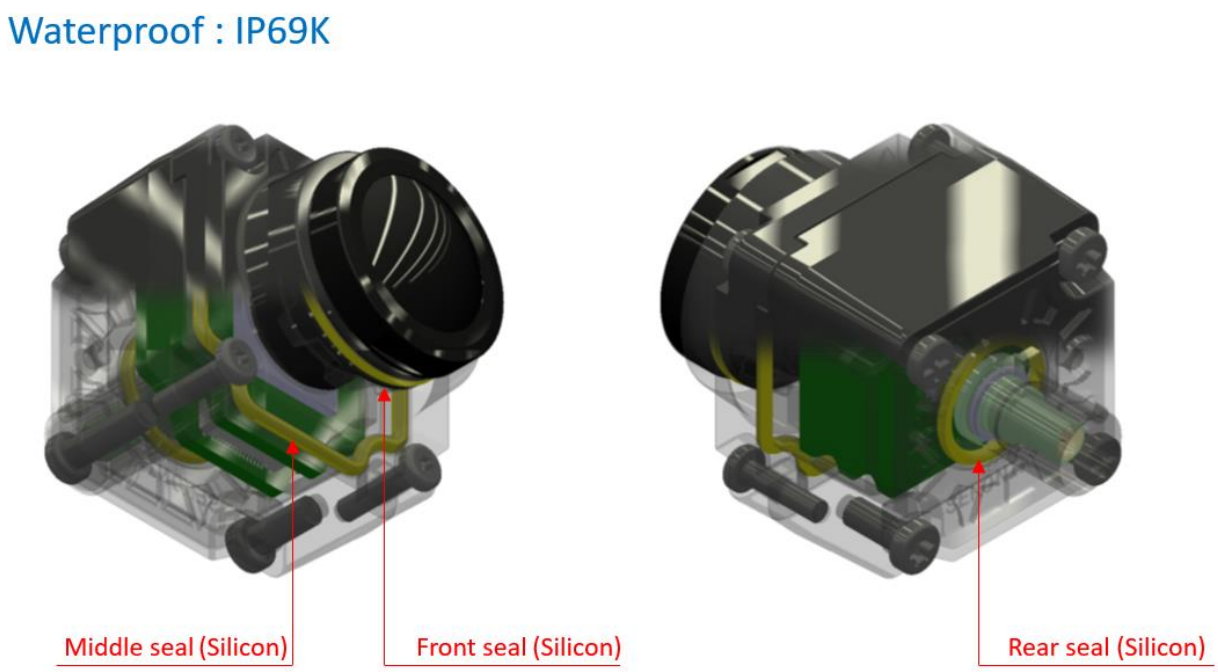
4.2 Water Proof

- Metal Housing and sealed Gasket implemented for water/weather-proof.
- Silicon Seal implemented for extra humid protection.
- Triple-sealed structure implemented



<PIC 12 : waterproof >

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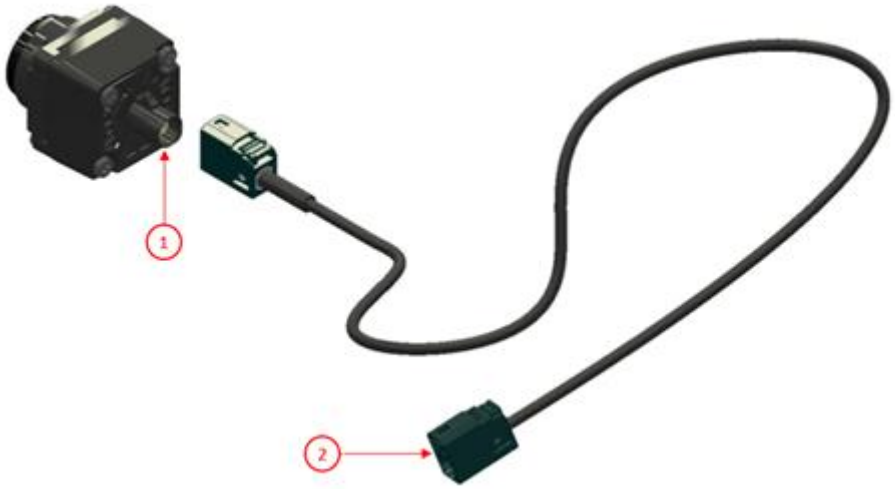
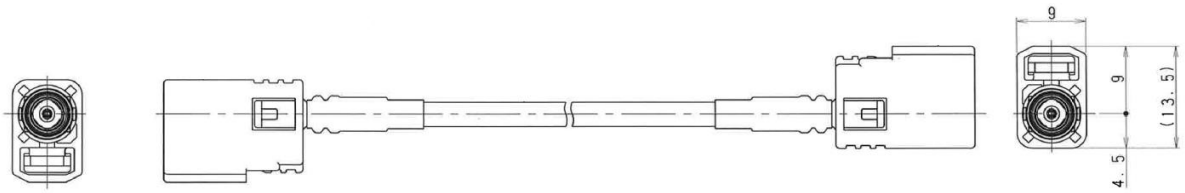
4.3 Cable & Connector



<PIC 13 : Camera and cable connector >

① Connector housing – FAKRA Z Type connector applied

② Cable connector (FAKRA type) – SMK CRS9001 connector supports IP69K



<PIC 14 : Cable & connector>

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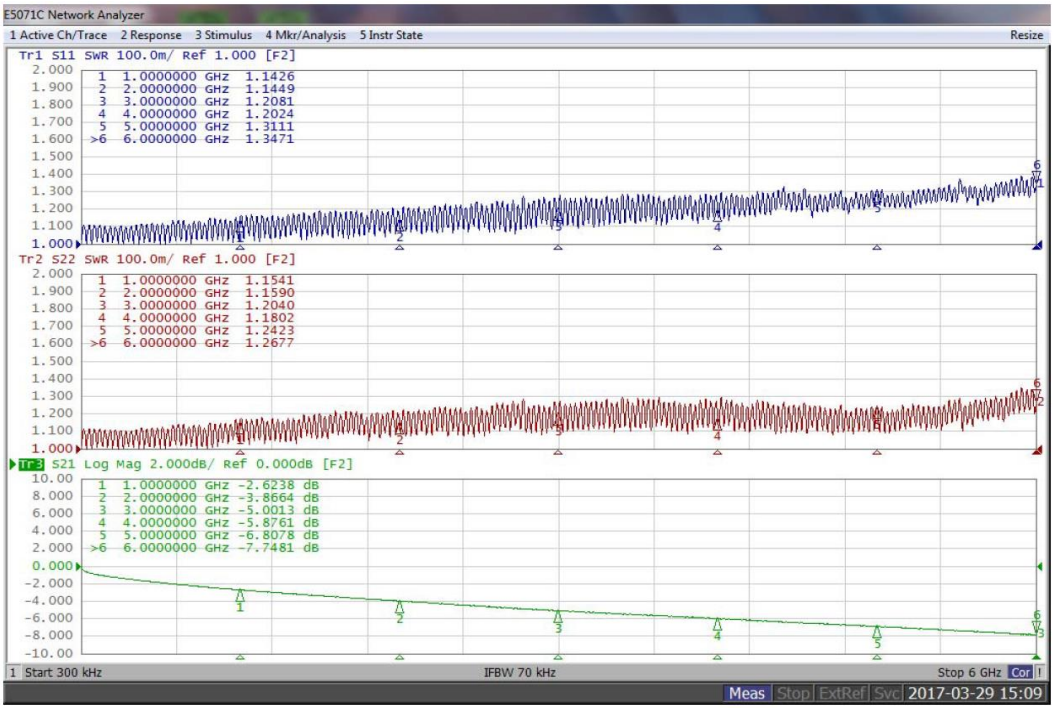

<PIC 14 : V S WR · Insertion Loss Comparison Data>

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Additional Characteristics

Family items

Part Numbers	Descriptions
SF3324-100	Sekonix_Camera_2M_AR0231_LVDS(PoC)_120(H) - 26x26x2b_rev0_RCCB
SF3325-100	Sekonix_Camera_2M_AR0231_LVDS(PoC)_60(H) - 26x26x2b_rev0_RCCB
SF3326-100	Sekonix_Camera_2M_AR0231_LVDS(PoC)_190(H) - 26x26x2b_rev0_RCCB
SF3324-101	Sekonix_Camera_2M_AR0231_LVDS(PoC)_120(H) - 26x26x2b_rev0_RGB
SF3325-101	Sekonix_Camera_2M_AR0231_LVDS(PoC)_60(H) - 26x26x2b_rev0_RGB
SF3326-101	Sekonix_Camera_2M_AR0231_LVDS(PoC)_190(H) - 26x26x2b_rev0_RGB

Additional version

Part numbers	Product Description
SF312X-20X	Sekonix_Camera_2M_AR0231+AP0202_LVDS(PoC)_XXX(H)_26x26x3b_rev0_RCCB (Image output format YUV @30fps, Serializer MAX9275)
SB1100	Test board – Deserializer MAX9276

Cable

Part Numbers	Descriptions
SC3112	Sekonix_Camera_Cable_3m_SMK_Fakra_Doubleside (3 Stands for 3 meters, number change depending on length of cable)

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Revision History

Date of change	Revision	Page	Contain of change
20160824	**1.0**		
20170417	**2.0**		
20170607	**2.2.1**	**13**	Cable connector – SMK CRS9001 connector supports IP69K
		14	Added Cable part numbers & descriptions
20170607	**2.2.2**	**7,8,9**	Lens Specification updated
20180912	**2.2.4**	**7,8,9**	Lens Specification updated : Lens, IR CUT wavelength is modified from '650±10 nm' to '700±10 nm'. The value is measured by more accurate measurement method
20190726	**2.2.5**	**7,8,9**	Lens Specification updated

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