

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: ANZEX 19.3001X	Current Issue: 0	Date of Issue: 2019-07-19
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Applicant: **Pepperl+Fuchs GmbH**
Lilienthalstrasse 200
68307 Mannheim
Germany

Equipment: Cuboidal inductive proximity sensors

Type of Explosion Protection: Intrinsic safety 'ia'

Explosion Protection Marking: Ex ia IIC T6...T1 Ga
or
Ex ia IIC T6...T1 Gb
or
Ex ia I Mb
or
Ex ia IIIC T135°C Da
or
Ex ib IIIC T135°C Db

*This certificate is granted subject to the conditions as set out in Standards Australia/Standards New Zealand Miscellaneous Publication **MP87.1***

Signed for and on behalf of issuing body

Name & Position


Ujen Singh – Quality & Certification Manager

This certificate is not transferable and remains the property of the issuing body.

The status of this certificate can be confirmed through the database located at www.anzex.com.au

Certificate issued by:

TestSafe Australia
919 Londonderry Road, Londonderry NSW 2753 Australia

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Manufacturer : **Pepperl+Fuchs GmbH**
Lilienthalstrasse 200
68307 Mannheim
Germany

Additional Manufacturing Location(s): **Pepperl+Fuchs Asia Pte. Ltd.**
P+F Building
18 Ayer Rajah Crescent
Singapore 139942
Singapore

Pepperl+Fuchs Co. Ltd.
Lot S 12-16a, Street 20
Tan Thuan EPZ
Ward tan Thuan Dong, District 7
Ho Chi Minh City
Viet Nam

PT. Pepperl+Fuchs Bintan
Jl. Asoka SD 56
Bintan Industrial Estate
Lobam, Bintan Island
Indonesia

Pepperl+Fuchs Manufacturing s.r.o.
Tovarni 10
54102 Trutnov
Czech Republic

STANDARDS:

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0:2011 Ed 6 Explosive atmospheres Part 0: Equipment—General requirements

IEC 60079-11:2011 Ed 6 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

This Certificate does not indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

The equipment listed has successfully met the examination and test requirements as recorded in:

Test Report Nos. & Issuing Bodies associated with all issues of the certificate: DE/PTB/ExTR11.0036/01, PTB

Quality Assessment Report No. & Issuing Body: DE/PTB/QAR06.0008/10

File Reference: 2018/018601

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: ANZEx 19.3001X	Current Issue: 0	Date of Issue: 2019-07-19
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Schedule

Equipment Description:

The cuboidal inductive proximity sensors of types FJ... NJ..., NB... and NC are used to convert mechanical displacements into an electrical signal.

The sensors are supplied from an intrinsically safe circuit and they are suitable to be used in hazardous areas of group I, group II and group III.

The area classification of the inductive sensor depends on the level of protection of the intrinsically safe circuits the sensors are connected to.

Electrical Ratings/Parameters

Evaluation and supply circuit:

Only for connection to a certified intrinsically safe circuit
 Ex ia IIC/IIB for EPL Ga
 resp. Ex ia IIIC for EPL Da
 resp. Ex ia IIC/IIB or Ex ib IIC/IIB for EPL Gb
 resp. Ex ia I Mb
 resp. Ex ia IIIC or Ex ib IIIC for EPL Db

Maximum values:

	Type 1	Type 2	Type 3	Type 4
Ui	16 V	16 V	16 V	16 V
Ii	25 mA	25 mA	52 mA	76 mA
Pi	34 mW	64 mW	169 mW	242 mW

Table 1

For relationship between type of the connected circuit, maximum permissible ambient temperature for group I (EPL Mb), group II (EPL Ga/Gb) resp. group III (EPL Da) equipment and temperature class as well as the effective internal reactances for the individual types of cuboidal inductive proximity sensors, reference is made to the following tables:

Table 2: Application as Group I equipment, EPL Mb:

Type	Ci (nF)	Li (µH)	type 1	type 2	type 3	type 4
			Ui = 16V Ii = 25 mA Pi = 34mW	Ui = 16V Ii = 25 mA Pi = 64 mW	Ui = 16V Ii = 52 mA Pi = 169 mW	Ui = 16V Ii = 76 mA Pi = 242 mW
maximum permissible ambient temperature in °C						
FJ6-110-N...	150	110	100	100	81	63
FJ7-N...	65	220	100	100	81	63
NCB2-F1-N0...	90	100	100	100	89	74
NCB2-V3-N0...	100	100	100	100	89	74
NCN2-F56-N1...	100	100	100	100	87	-
NBN3-F69-N0...	100	100	100	100	71	47
NBN4-V3-N0...	100	100	100	100	89	74
NBN4-V3-N0-Y189289	120	100	100	100	71	47

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: **ANZEX 19.3001X**

Current Issue: 0

Date of Issue: 2019-07-19

			type 1 Ui = 16V li = 25 mA Pi = 34mW	type 2 Ui = 16V li = 25 mA Pi = 64 mW	type 3 Ui = 16V li = 52 mA Pi = 169 mW	type 4 Ui = 16V li = 76 mA Pi = 242 mW
Type	Ci (nF)	Li (μH)	maximum permissible ambient temperature in °C			
NBB15-U...K-N0...	110	200	100	100	89	74
NBB20-U...K-N0...	110	200	100	100	89	74
NBN30-U...K-N0...	105	300	100	100	89	74
NBN40-U...K-N0...	105	300	100	100	89	74
NBN40-U...LK-N0...	165	130	100	100	89	74
NCN4-V3-N0...	100	100	100	100	89	74
NCB15+U...+N0...	110	160	100	100	89	74
NCN15-M...-N0...	100	100	100	100	89	74
NCB20-L2-N0...	110	200	100	100	89	74
NCB40-FP-N0...	220	360	100	100	89	74
NCN20+U...+N0...	110	160	100	100	89	74
NCN30+U...+N0...	110	160	100	100	89	74
NCN40+U...+N0...	120	130	100	100	89	74
NCN40-L2-N0...	105	300	100	100	89	74
NCN50-FP-N0...	220	360	100	100	89	74
NJ0,8-F-N...	30	50	100	100	78	57
NJ1,5-F-N...	30	50	100	100	78	57
NJ2,5-F-N...	40	50	100	100	89	74
NJ2-F1-N...	30	50	100	100	89	74
NJ2-V3-N...	40	50	100	100	89	74
NJ3-V3-N...	40	50	100	100	89	74
NJ4-F-N...	150	100	100	100	89	74
NJ6-F-N...	70	100	100	100	89	74
NJ10-F-N...	85	100	100	100	89	74
NJ15+U...+N...	140	130	100	100	89	74
NJ15-M1...-N...	140	100	100	100	89	74
NJ20+U...+N...	150	130	100	100	89	74
NJ30+U...+N...	160	130	100	100	89	74
NJ30P+U...+1N...	150	170	100	100	89	74
NJ40+...+N...	180	130	100	100	89	74
NJ50-FP-N...	320	360	100	100	89	74

Table 3: Application as Group II equipment, EPL Ga/Gb:

				type 1 Ui = 16V li = 25 mA Pi = 34mW	type 2 Ui = 16V li = 25 mA Pi = 64 mW	type 3 Ui = 16V li = 52 mA Pi = 169 mW	type 4 Ui = 16V li = 76 mA Pi = 242 mW								
maximum permissible ambient temperature in °C for application in temperature class															
Type	EPL	Ci nF	Li μH	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
FJ6-110-N...	Ga/Gb	150	110	73	88	100	73	88	100	62	77	81	54	63	63
FJ7-N...	Ga/Gb	65	220	73	88	100	73	88	100	62	77	81	54	63	63
NCB2-F1-N0...	Ga/Gb	90	100	73	88	100	66	81	100	45	60	89	30	45	74

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: **ANZEx 19.3001X**

Current Issue: 0

Date of Issue: 2019-07-19

				type 1 Ui = 16V Ii = 25 mA Pi = 34mW			type 2 Ui = 16V Ii = 25 mA Pi = 64 mW			type 3 Ui = 16V Ii = 52 mA Pi = 169 mW			type 4 Ui = 16V Ii = 76 mA Pi = 242 mW		
maximum permissible ambient temperature in °C for application in temperature class															
Type	EPL	Ci nF	Li µH	T6	T5	T4- T1	T6	T5	T4- T1	T6	T5	T4- T1	T6	T5	T4- T1
NCB2-V3-N0...	Ga/Gb	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCN2-F56-N1...	Ga/Gb	100	100	75	90	100	70	85	100	55	70	87	-	-	-
NBN3-F69-N0...	Ga/Gb	100	100	72	87	100	65	80	100	41	56	63	24	37	37
NBN4-V3-N0...	Ga/Gb	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NBN4-V3-N0-Y189289	Ga/Gb	120	100	72	87	100	65	80	100	41	56	63	24	37	37
NBB15-U...K-N0...	Ga/Gb	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NBB20-U...K-N0...	Ga/Gb	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NBN30-U...K-N0...	Ga/Gb	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NBN40-U...K-N0...	Ga/Gb	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NBN40-U...LK-N0...	Ga/Gb	165	130	73	88	100	66	81	100	45	60	89	30	45	74
NCN4-V3-N0...	Ga/Gb	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCB15+U...+N0...	Ga/Gb	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCN15-M...-N0...	Ga/Gb	100	100	73	88	100	66	81	100	45	60	89	30	45	74
NCB20-L2-N0...	Ga/Gb	110	200	73	88	100	66	81	100	45	60	89	30	45	74
NCB40-FP-N0...	Ga/Gb	220	360	73	88	100	66	81	100	45	60	89	30	45	74
NCN20+U...+N0...	Ga/Gb	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCN30+U...+N0...	Ga/Gb	110	160	73	88	100	66	81	100	45	60	89	30	45	74
NCN40+U...+N0...	Ga/Gb	120	130	73	88	100	66	81	100	45	60	89	30	45	74
NCN40-L2-N0...	Ga/Gb	105	300	73	88	100	66	81	100	45	60	89	30	45	74
NCN50-FP-N0...	Ga/Gb	220	360	73	88	100	66	81	100	45	60	89	30	45	74
NJ0,8-F-N...	Ga/Gb	30	50	73	88	100	67	82	100	45	60	78	30	45	57
NJ1,5-F-N...	Ga/Gb	30	50	73	88	100	67	82	100	45	60	78	30	45	57
NJ2,5-F-N...	Ga/Gb	40	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ2-F1-N...	Ga/Gb	30	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ2-V3-N...	Ga/Gb	40	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ3-V3-N...	Ga/Gb	40	50	73	88	100	66	81	100	45	60	89	30	45	74
NJ4-F-N...	Ga/Gb	150	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ6-F-N...	Ga/Gb	70	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ10-F-N...	Ga/Gb	85	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ15+U...+N...	Ga/Gb	140	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ15-M1...-N...	Ga/Gb	140	100	73	88	100	66	81	100	45	60	89	30	45	74
NJ20+U...+N...	Ga/Gb	150	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ30+U...+N...	Ga/Gb	160	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ30P+U...+1N...	Ga/Gb	150	170	73	88	100	66	81	100	45	60	89	30	45	74
NJ40+...+N...	Ga/Gb	180	130	73	88	100	66	81	100	45	60	89	30	45	74
NJ50-FP-N...	Ga/Gb	320	360	73	88	100	66	81	100	45	60	89	30	45	74

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: ANZEx 19.3001X	Current Issue: 0	Date of Issue: 2019-07-19
--	------------------	---------------------------

Table 4: Application as Group III equipment, EPL Da:

Type	Ci (nF)	Li (µH)	type 1	type 2	type 3	type 4
			Ui = 16V Ii = 25 mA Pi = 34mW	Ui = 16V Ii = 25 mA Pi = 64 mW	Ui = 16V Ii = 52 mA Pi = 169 mW	Ui = 16V Ii = 76 mA Pi = 242 mW
maximum permissible ambient temperature in °C						
FJ6-110-N...	150	110	100	100	81	63
FJ7-N...	65	220	100	100	81	63
NCB2-F1-N0...	90	100	100	100	89	74
NCB2-V3-N0...	100	100	100	100	89	74
NCN2-F56-N1...	100	100	100	100	87	-
NBN3-F69-N0...	100	100	100	100	63	37
NBN4-V3-N0...	100	100	100	100	89	74
NBN4-V3-N0-Y189289	120	100	100	100	63	37
NBB15-U...K-N0...	110	200	100	100	89	74
NBB20-U...K-N0...	110	200	100	100	89	74
NBN30-U...K-N0...	105	300	100	100	89	74
NBN40-U...K-N0...	105	300	100	100	89	74
NBN40-U...LK-N0...	165	130	100	100	89	74
NCN4-V3-N0...	100	100	100	100	89	74
NCB15+U...+N0...	110	160	100	100	89	74
NCN15-M...-N0...	100	100	100	100	89	74
NCB20-L2-N0...	110	200	100	100	89	74
NCB40-FP-N0...	220	360	100	100	89	74
NCN20+U...+N0...	110	160	100	100	89	74
NCN30+U...+N0...	110	160	100	100	89	74
NCN40+U...+N0...	120	130	100	100	89	74
NCN40-L2-N0...	105	300	100	100	89	74
NCN50-FP-N0...	220	360	100	100	89	74
NJ0,8-F-N...	30	50	100	100	78	57
NJ1,5-F-N...	30	50	100	100	78	57
NJ2,5-F-N...	40	50	100	100	89	74
NJ2-F1-N...	30	50	100	100	89	74
NJ2-V3-N...	40	50	100	100	89	74
NJ3-V3-N...	40	50	100	100	89	74
NJ4-F-N...	150	100	100	100	89	74
NJ6-F-N...	70	100	100	100	89	74
NJ10-F-N...	85	100	100	100	89	74
NJ15+U...+N...	140	130	100	100	89	74
NJ15-M1...-N...	140	100	100	100	89	74
NJ20+U...+N...	150	130	100	100	89	74
NJ30+U...+N...	160	130	100	100	89	74
NJ30P+U...+1N...	150	170	100	100	89	74
NJ40+...+N...	180	130	100	100	89	74
NJ50-FP-N...	320	360	100	100	89	74

The dots in the labelling represent free definable parameters. This free definable parameters can be omitted or replaced by letters or digits.

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: **ANZEx 19.3001X**

Current Issue: 0

Date of Issue: 2019-07-19

When assigning the actual sensor to the table use the model description which describes the sensor best. Letters and digits describe the different types according to the model description key.

The sum of all capacitances and inductances, including tolerance and a 10 m cable, result to the given values for Ci and Li shown above.

Specific Conditions of Use:

- For relationship between type of the connected circuit, maximum permissible ambient temperature and temperature class as well as the effective internal reactance for the individual types of cuboidal inductive proximity sensors, reference is made to tables 2 to 4 and in the operating instructions manual.
- Appropriate measures need to be taken to protect the cuboidal inductive proximity sensors against mechanical damage due to impact if they are used within an ambient temperature range between $-60\text{ }^{\circ}\text{C}$ and $-20\text{ }^{\circ}\text{C}$. An ambient temperature below $-60\text{ }^{\circ}\text{C}$ is not permissible.
- The connection facilities of the cuboidal inductive proximity sensors shall be installed as such that a minimum degree of protection of IP20 according IEC 60529 is complied with.
- When the following types of cuboidal inductive proximity sensors are applied corresponding to the explosion group, apparatus group and zones tabulated below, inadmissible electrostatic charge of the plastic housing has to be prevented. The equipment shall be labelled with an appropriate warning note:

Type	Group I	Group II Zone 0 (EPL Ga)	Group II Zone 1 (EPL Gb)	Group III
FJ6-110-N...	-	IIB/IIC	IIC	III
FJ7-N...	-	IIC	-	III
NCB2-F1-N0...	-	IIC	-	-
NCB2-V3-N0...	-	IIC	-	-
NCN2-F56-N1...	-	IIC	-	-
NBN3-F69-N0...	-	IIC	-	-
NBN4-V3-N0...	-	IIC	-	-
NBN4-V3-N0-Y189289	-	IIC	-	-
NBB15-U...K-N0...	-	IIC	IIC	III
NBB20-U...K-N0...	-	IIC	IIC	III
NBN30-U...K-N0...	-	IIC	IIC	III
NBN40-U...K-N0...	-	IIC	IIC	III
NBN40-U...LK-N0...	-	IIA/IIB/IIC	IIC	III
NCN4-V3-N0...	-	IIC	-	-
NCB15+U...+N0...	-	IIC	IIC	III
NCN15-M...-N0...	-	IIC	-	III
NCB20-L2-N0...	-	IIC	-	III
NCB40-FP-N0...	-	IIA/IIB/IIC	IIC	III
NCN20+U...+N0...	-	IIC	IIC	III
NCN30+U...+N0...	-	IIC	IIC	III
NCN40+U...+N0...	-	IIB/IIC	IIC	III
NCN40-L2-N0...	-	IIC	-	III
NCN50-FP-N0...	-	IIA/IIB/IIC	IIC	III
NJ0,8-F-N...	-	-	-	-
NJ1,5-F-N...	-	-	-	-
NJ2,5-F-N...	-	IIC	-	-

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: ANZEx 19.3001X	Current Issue: 0	Date of Issue: 2019-07-19
--	------------------	---------------------------

Type	Group I	Group II Zone 0 (EPL Ga)	Group II Zone 1 (EPL Gb)	Group III
NJ2-F1-N...	-	IIC	-	III
NJ2-V3-N...	-	IIC	-	-
NJ3-V3-N...	-	IIC	-	-
NJ4-F-N...	-	IIC	IIC	-
NJ6-F-N...	-	IIC	-	III
NJ10-F-N...	-	IIC	-	III
NJ15+U...+N...	-	IIC	IIC	III
NJ15-M1...-N...	-	IIC	-	III
NJ20+U...+N...	-	IIC	IIC	III
NJ30+U...+N...	-	IIC	IIC	III
NJ30P+U...+1N...	-	IIB/IIC	IIC	III
NJ40+...+N...	-	IIB/IIC	IIC	III
NJ50-FP-N...	-	IIA/IIB/IIC	IIC	III

Cuboidal inductive proximity sensors which are marked (IIC or IIB or IIA or III) in column "Group ..." need to be protected against dangerous electrostatic charges.

5. For the application of the following cuboidal inductive proximity sensors in hazardous areas of group I, II and III appropriate measures need to be taken to protect the free resin surface against mechanical damage if the free resin surface is accessible after installation:

FJ6-110-N...
FJ7-N...
NBN3-F69-N0...
NBN4-V3-N0...
NBN4-V3-N0-
Y189289
NCB2-V3-N0...
NCN2-F56-N1...
NCN4-V3-N0...
NJ0,8-F-N...
NJ1,5-F-N...
NJ2-V3-N...
NJ3-V3-N...

6. Inadmissible electrostatic charge of parts of the metal housing has to be avoided for the following types of cuboidal inductive sensors. Dangerous electrostatic charge of parts of the metal housing can be avoided by grounding of these parts whereas very small parts of the metal housing (e.g. screws) do not need to be grounded:

FJ6-110-N...	NCB15+U4+N0...	NJ15+U3+N...
FJ7-N...	NCB20-L2-N0...	NJ15+U4+N...
NBB15-U3K-N0...	NCB40-FP-N0-P3...	NJ15-M1-N-V...
NBB15-U4K-N0...	NCB40-FP-N0-P4...	NJ20+U3+N...
NBB20-U3K-N0...	NCN20+U3+N0...	NJ20+U4+N...
NBB20-U4K-N0...	NCN20+U4+N0...	NJ30+U3+N...
NBN30-U3K-N0...	NCN30+U3+N0...	NJ30+U4+N...
NBN30-U4K-N0...	NCN30+U4+N0...	NJ30P+U3+1N...
NBN40-U3K-N0...	NCN40-L2-N0...	NJ30P+U4+1N...
NBN40-U3LK-N0...	NCN40+U3+N0...	NJ40+U3+N...

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: ANZEx 19.3001X	Current Issue: 0	Date of Issue: 2019-07-19
--	------------------	---------------------------

NBN40-U4K-N0...	NCN40+U4+N0...	NJ40+U4+N...
NBN40-U4LK-N0...	NCN50-FP-N0-P3...	NJ50-FP-N-P3...
NCB15+U3+N0...	NCN50-FP-N0-P4...	NJ50-FP-N-P4...

7. The maximum permissible mass fractions of metallic materials are exceeded for the following types of cubical inductive sensors when applied as EPL Ga and Mb equipment. In hazardous areas requiring the application of EPL Ga equipment it shall be ensured by appropriate measures that an ignition hazard due to impact or friction effects cannot occur. Below models does not apply for EPL Mb equipment.

NBB15-U3K-N0...	NCB40-FP-N0-P3...	NJ20+U3+N...
NBB15-U4K-N0...	NCB40-FP-N0-P4...	NJ20+U4+N...
NBB20-U3K-N0...	NCN20+U3+N0...	NJ30+U3+N...
NBB20-U4K-N0...	NCN20+U4+N0...	NJ30+U4+N...
NBN30-U3K-N0...	NCN30+U3+N0...	NJ30P+U3+1N...
NBN30-U4K-N0...	NCN30+U4+N0...	NJ30P+U4+1N...
NBN40-U3K-N0...	NCN40+U3+N0...	NJ40+U3+N...
NBN40-U3LK-N0...	NCN40+U4+N0...	NJ40+U4+N...
NBN40-U4K-N0...	NCN50-FP-N0-P3...	NJ50-FP-N-P3...
NBN40-U4LK-N0...	NCN50-FP-N0-P4...	NJ50-FP-N-P4...
NCB15+U3+N0...	NJ15+U3+N...	
NCB15+U4+N0...	NJ15+U4+N...	

Additional Information:

For electrical and thermal specifications for the individual types of cuboidal inductive proximity sensors, reference is made above.

Manufacturer's Documents associated with this Issue:

Document Number	Pages / Sheets	Document Title	Revision	Date
16-1333TE	1	Summary approval documentation	-	2019-06-26
16-1333IE-00	36	Description	-	2017-05-12
16-1333IE-01	6	Schematics	-	2017-05-12
16-1333IE-02	3	Ex-relevant component list	-	2017-05-12
16-1333IE-09	3	Extract of the Ex-relevant aspects of the instructions	-	2017-05-12
16-1333IE-10	2	Marking	-	2017-05-12
16-1333TE-09	3	ANZEx 19.3001X, Cuboidal sensors Instructions (eg. For NJ2-V3-N)	-	2019-06-26
16-1333TE-10	1	ANZEx 19.3001X, Cuboidal sensors Marking	-	2019-06-26