



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx KDB 16.0011X	Page 1 of 4	<u>Certificate history:</u>
Status:	Current	Issue No: 2	Issue 1 (2018-02-19) Issue 0 (2016-08-26)
Date of Issue:	2021-08-30		
Applicant:	FRABA B.V. Jan Campertstraat 11, 6416 SG Heerlen Netherlands		
Equipment:	Encoder type OCF and UCF		
Optional accessory:			
Type of Protection:	Equipment protection by type protection "n" and dust ignition protection by enclosure "t"		
Marking:	Ex nA IIC T* Gc Ex tc III C T**°C Dc		

Approved for issue on behalf of the IECEx
Certification Body:

mgr inż. Piotr Madej

Position:

Head of ExCB

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Główny Instytut Górnictwa, Kopalnia Doświadczalna "BARBARA"
(Central Mining Institute Experimental Mine "Barbara")
ul. Podleska 72
43-190 Mikołów
Poland





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Date of issue: 2021-08-30

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Manufacturer: **FRABA B.V.**
Jan Campertstraat 11, 6416 SG Heerlen
Netherlands

Additional manufacturing locations: **Fraba B.V., Oddział Produkcyjno-Logistyczny CONISTICS Sp. z o.o.**
Os. Przemysłowe 24
69-100 Słubice
(Site audited)
Poland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

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 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-15:2010](#) Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

[IEC 60079-31:2013](#) Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

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

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[PL/KDB/ExTR16.0003/02](#)

Quality Assessment Report:

[PL/OBAC/QAR20.0002/01](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Encoders type OCF and UCF are used to precisely determine the physical position and/or revolutions over time, for movement of elements attached to it. The acquired information is then transferred to the master device.

By its physical position, it is possible to determine both the position of the element in a given environment and its state in relation to the axis (rotation or inclination). Speed is determined by determining the change of position with respect to time.

The encoders type OCF and UCF type are based on absolute optical and magnetic encoders, depending on the version, available also in single and multi-turn versions. There are versions with various communication interfaces, such as: Fieldbus, Analog or Ethernet.

Description of available versions of Encoder type OCF and UCF is included in attachment.

Technical parameters:

Nominal voltage: 30 VDC

Maximum nominal current: 450 mA

Ambient temperature range: $-40^{\circ}\text{C} + 40^{\circ}\text{C}$ or $-40^{\circ}\text{C} + 55^{\circ}\text{C}$ or $-40^{\circ}\text{C} + 70^{\circ}\text{C}$ (depends on version)

Degree of protection: IP 64 or IP66 or IP67 (depends on version)

Description of marking of temperature classes / maximum surface temperature is included in attachment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

- Temperature class of the device (T^* for gas) or the maximum surface temperature (T^{**} for dust) depends on the ambient temperature and maximum speed of the encoder. It should be determined in accordance with the manufacturer's manual.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

New versions of the device have been implemented.

Annex:

[CoC_KDB_16_0011X_02_Attachment_1.pdf](#)

Encoder type OCF is available in the following versions:

OCF	-	xxxxx	-	xxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Where:

1	Technology	OCF – optical encoder	
2	Hardware/Software Interface:	CAxxB	CANopen
		D2xxB	DeviceNET
		ECxxB	EtherCAT
		E2xxB	Powerlink
		EMxxB	Modbus TCP IP
		DPxxB	Profibus
		EExxB	Ethernet
		ElxxB	IP/Profinet IP
		PPxxG (B)	Parallel Preset
		P1xxG(B)	SSI Gray or Binary
		S1xxG(B)	SSI + incremental (RS-422) Binary or Gray
3	Revolutions/Resolution	00xx	single-turn encoder
		XXXX	multi-turn encoder
4	Flange Type	C - 58 mm clamp flange	
		B - 58 mm blind hollow shaft	
		S - 58 mm synchro flange	
		T - 58mm through hollow shaft	
		9 - square flange for optical encoder	
5	Shaft diameter	XX – mm or inches	
6	Protection Class/ Material	0 - IP64 / aluminum	
		S - IP66 / aluminum with sealing shaft	
		V - IP67 / Stainless Steel V2A	
		W - IP67 / Stainless Steel V4A	
7	Connection Type	C – 1 m cable exit	
		2 – 2 m cable exit	
		5 - 5 m cable exit	
		A – 10 m cable exit	
		x – other lengths	
		H – connection cap	
		P – M12 connector exit(s)	
8	Connection Type Options	A – axial exit	
		R – radial exit	
		3 – 3 cable glands	
		2 – 2 cable glands or connectors, 1 blind plug	
		1 - 1 cable gland or connector, 2 blind plugs	
9	Connection Details	E – Atex graded cable exit	
		Q – M12 8 pin connector(s)	
		M – M12 5 pin connector(s)	
10	Special Option	XXX – customized software settings or configuration	

Encoder type UCF is available in the following versions:

Absolute Encoder

UCF	-	xxxxx	-	xxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Incremental Encoder

UCF	-	xxxxx	-	xxxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Where:

1	Technology	UCF – magnetic encoder	
2	Hardware/Software Interface:	IPxxx	incremental encoder programmable
		AVxx1	Analog Voltage 0 - 5V
		AVxx2	Analog Voltage 0 - 10V
		AVxx3	Analog Voltage 0.5 - 4.5V
		AVxx4	Analog Voltage 0.5 - 9.5V
		ACxx5	Analog Current 4 - 20 mA
		ACxx6	Analog Current 0 - 20 mA
		CxxB	Canopen
		CLxxB	Canopen Lift
		C9xxB	J1939
		S1xxG(B)	SSI Gray or Binary
		Sxxxx	SSI programmable version
		LKxxB	I/O link
		BCxxB	BiSS-C
		M1xxB	Modbus
		ECxxB	EtherCAT magnetic
		EExxB	Ethernet IP magnetic
		ElxxB	Profinet magnetic
3	Revolution/Resolution (absolute) Pulses per revolution (incremental)	00xx	single-turn encoder
		xxxx	multi-turn encoder
		xxxxx	programmable ppr (00001-16384)
4	Flange Type	M - 58 mm clamp flange for 36 mm housing	
		R - 36 mm synchro flange	
		V - 36-42 mm blind hollow shaft	
		L - 58 mm clamp flange for 58 mm housing	
		H - 58 mm blind hollow shaft	
		Y - 58 mm synchro flange	
		3 - square flange for 36 mm housing	
		4 - square flange	
		D - synchro flange with higher IP protection level stainless steel	
		G - synchro flange with higher IP protection level aluminum	

5	Shaft diameter	xx – mm or inches
6	Protection Class/ Material	0 - IP64 / aluminum
		S - IP66 / aluminum with sealing shaft
		V - IP67 / stal nierdzewna V2A
		W - IP67 / stal nierdzewna V4A
		D – IP67 / aluminum with sealing
7	Connection Type	G – IP67/ aluminum with sealing
		C – 1 m cable exit
		2 – 2 m cable exit
		5 - 5 m cable exit
		A – 10 m cable exit
		x – other lengths
		H – connection cap
8	Connection Type Options	P – M12, MS14, MS16, MS18 connector exit(s)
		A – axial exit
		R – radial exit
		3 – 3 cable glands
		2 – 2 cable glands or connectors, 1 blind plug
		1 - 1 cable gland or connector, 2 blind plugs
9	Connection Details	E – Atex graded cable exit
		Q – M12 8 pin connector(s)
		M – M12 5 pin connector(s)
		D – MS14 6 pin
		E – MS16 7 pin
		F – MS18 10pin
10	Special Option	XXX – customized software settings or configuration

Marking of temperature classes / maximum surface temperatures.

Maximum ambient temperature Maximum revolutions	Ta = 40°C	Ta = 55°C	Ta = 70°C
3000rpm	T6	T5	T4
	85°C	100°C	115°C
2500rpm	T6	T5	T4
	85°C	100°C	115°C
2000rpm	T6	T6	T5
	85°C	85°C	100°C
1500rpm	T6	T6	T5
	85°C	85°C	100°C



TYPE EXAMINATION CERTIFICATE

- [1] [2] Equipment, components as well as control and measurement equipment intended for use in potentially explosive atmospheres. Directive 2014/34/EU (Rozporządzenie Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817)
- [3] 'Type examination certificate (optional):
KDB 16ATEX0027X **1st edition**
- [4] Equipment
Encoder type OCF and UCF
- [5] Manufacturer:
FRABA B.V.
- [6] Address
**Jan Campertstraat 11 6416 SG Heerlen,
Netherlands**

- [7] This equipment and any acceptable variations thereto are specified in the schedule to this certificate
- [8] The Central Mining Institute, Certification Body, certifies that the equipment specified in this certificate has been found to comply with the essential health and safety requirements relating to the design and construction of electrical and non-electrical equipment of Category 3 or non-electrical equipment of Category 2 intended for use in potentially explosive atmosphere given in Annex II to Directive 2014/34/EU (Załącznik nr 2 Rozporządzenia Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817).

The results of the assessment and examinations as well as the list of agreed documentation are recorded in the confidential Report **KDB No 16.038-1 [T-7377]**

- [9] The essential health and safety requirements have been met by compliance with the requirements of the following standards:

**EN IEC 60079-0:2018; EN 60079-15:2010;
EN 60079-31:2014**

- [10] If sign "X" is placed after the certificate number, this means the specific conditions of use set out in the schedule to this certificate.
- [11] This type examination certificate relates only to the construction, assessment and testing of the specified product in accordance with Directive 2014/34 /EU (Rozporządzenie Ministra Rozwoju z dnia 06.06.2016r. Dz.U. z dnia 09.06.2016r. Poz. 817). The certificate shall not cover the remaining requirements of the Directive regarding the manufacturing process and placing the equipment on the market.
- [12] The marking of the equipment shall include the following:



**II 3G Ex nA IIC T* Gc
II 3D Ex tc IIIC T**°C Dc**

mgr inż. Piotr Madej

ATEX Certification
Expert



Główny Instytut Górnictwa
Jednostka Oceny Zgodności
p.o. KIEROWNIKA

dr inż. Dariusz Stefaniak

Date of issue: **30.08.2021**

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SCHEDULE
Type examination certificate
KDB 16ATEX0027X 1st edition

**[15] Description:**

Encoders type OCF and UCF are used to precisely determine the physical position and/or revolutions over time, for movement of elements attached to it. The acquired information is then transferred to the master device.

By its physical position, it is possible to determine both the position of the element in a given environment and its state in relation to the axis (rotation or inclination). Speed is determined by determining the change of position with respect to time.

The encoders type OCF and UCF type are based on absolute optical and magnetic encoders, depending on the version, available also in single and multi-turn versions. There are versions with various communication interfaces, such as: Fieldbus, Analog or Ethernet.

Encoder type OCF is available in the following versions:

OCF	-	xxxxxx	-	xxxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Where:

1	Technology	OCF - optical encoder	
2	Hardware/Software Interface:	CAxxB	CANopen
		D2xxB	DeviceNET
		ECxxB	EtherCAT
		E2xxB	Powerlink
		FMxxR	Modbus TCP IP
		DPxxB	Profibus
		EExxB	Ethernet
		EIxxB	IP/Profinet IP
		PPxxG (B)	Parallel Preset
		PlxxG(B)	SSI Gray or Binary
		SlxxG(B)	SSI + incremental (RS-422) Binary or Gray
3	Revolutions/Resolution	00xx	single-turn encoder
		XXXX	multi-turn encoder
4	Flange Type	C - 58 mm clamp flange	
		B - 58 mm blind hollow shaft	
		S - 58 mm synchro flange	
		T - 58mm through hollow shaft	
		9 - square flange for optical encoder	
5	Shaft diameter	XX - mm or inches	



6	Protection Class/ Material	0 - IP64 / aluminum
		S - IP66 / aluminum with sealing shaft
		V - IP67 / Stainless Steel V2A
		W - IP67 / Stainless Steel V4A
7	Connection Type	C - 1 m cable exit
		2 - 2 m cable exit
		5 - 5 m cable exit
		A - 10 m cable exit
		x - other lengths
		H - connection cap
8	Connection Type Options	P - M12 connector exit(s)
		A - axial exit
		R - radial exit
		3 - 3 cable glands
		2 - 2 cable glands or connectors, 1 blind plug
		1 - 1 cable gland or connector, 2 blind plugs
9	Connection Details	E - Atex graded cable exit
		Q - M12 8 pin connector(s)
		M - M12 5 pin connector(s)
10	Special Option	XXX - customized software settings or configuration



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SCHEDULE
Type examination certificate
KDB 16ATEX0027X 1st edition



Encoder type UCF is available in the following versions:

Absolute Encoder

UCF	-	xxxxxx	-	xxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Incremental Encoder

UCF	-	xxxxxx	-	xxxxxx	-	x	xx	x	-	x	x	x	-	xxx
1		2		3		4	5	6		7	8	9		10

Where:

1	Technology	UCF - magnetic encoder	
2	Hardware/Software Interface:	IPxxx	incremental encoder programmable
		AVxx1	Analog Voltage 0 - 5V
		AVxx2	Analog Voltage 0 - 10V
		AVxx3	Analog Voltage 0.5 - 4.5V
		AVxx4	Analog Voltage 0.5 - 9.5V
		ACxx5	Analog Current 4 - 20 mA
		ACxx6	Analog Current 0 - 20 mA
		CAxxB	Canopen
		CLxxB	Canopen Lift
		C9xxB	J1939
		S1xxG(B)	SSI Gray or Binary
		Sxxxx	SSI programmable version
		LKxxB	I/O link
		BCxxB	BiSS-C
		M1xxB	Modbus
		ECxxB	EtherCAT magnetic
		EExxB	Ethernet IP magnetic
		EIxxB	Profinet magnetic
3	Revolution/Resolution (absolute)	00xx	single-turn encoder
	Pulses per revolution (incremental)	xxxx	multi-turn encoder
		xxxxxx	programmable (max. 102401-16384)



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SCHEDULE
Type examination certificate
KDB 16ATEX0027X 1st edition



4	Flange Type	M - 58 mm clamp flange for 36 mm housing
		R - 36 mm synchro flange
		V - 36-42 mm blind hollow shaft
		L - 58 mm clamp flange for 58 mm housing
		H - 58 mm blind hollow shaft
		Y - 58 mm synchro flange
		3 - square flange for 36 mm housing
		4 - square flange
		D - synchro flange with higher IP protection level stainless steel
		G - synchro flange with higher IP protection level aluminum
5	Shaft diameter	xx - mm or inches
6	Protection Class/ Material	0 - IP64 / aluminum
		S - IP66 / aluminum with sealing shaft
		V - IP67 / stal nierdzewna V2A
		W - IP67 / stal nierdzewna V4A
		D - IP67 / aluminum with sealing
7	Connection Type	G - IP67/ aluminum with sealing
		C - 1 m cable exit
		2 - 2 m cable exit
		5 - 5 m cable exit
		A - 10 m cable exit
		x - other lengths
		II - connection cap
8	Connection Type Options	P - M12, MS14, MS16, MS18 connector exit(s)
		A - axial exit
		R - radial exit
		3 - 3 cable glands
		2 - 2 cable glands or connectors, 1 blind plug
9	Connection Details	1 - 1 cable gland or connector, 2 blind plugs
		E - Atex graded cable exit
		Q - M12 8 pin connector(s)
		M - M12 5 pin connector(s)
		D - MS14 6 pin
		E - MS16 7 pin
10	Special Option	F - MS18 10pin
		XXX - customized software settings or configuration



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SCHEDULE
Type examination certificate
KDB 16ATEX0027X 1st edition



Technical parameters:

Nominal voltage: 30 VDC
Maximum nominal current: 450 mA
Ambient temperature range: -40°C ÷ 40°C
or
-40°C ÷ 55°C
or
-40°C ÷ 70°C
(depends on version)
Degree of protection: IP64 / IP66 / IP67
(depends on version)

Marking of temperature classes / maximum surface temperatures.

Maximum ambient temperature Maximum revolutions	Ta = 40°C	Ta = 55°C	Ta = 70°C
3000rpm	T6	T5	T4
	85°C	100°C	115°C
2500rpm	T6	T5	T4
	85°C	100°C	115°C
2000rpm	T6	T6	T5
	85°C	85°C	100°C
1500rpm	T6	T6	T5
	85°C	85°C	100°C

[16] Test Report:

"ATEX assessment report" KDB No 16.038-1

[17] Special conditions of use:

- Temperature class of the device (T* for gas) or the maximum surface temperature (T** for dust) depends on the ambient temperature and maximum speed of the encoder. It should be determined in accordance with the manufacturer's manual.



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[14]

SCHEDULE
Type examination certificate
KDB 16ATEX0027X 1st edition



[18] Essential health and safety requirements:

Met by fulfilling the requirements of the following standards:

- | | |
|---------------------|------------------------------|
| EN IEC 60079-0:2018 | (PN-EN IEC 60079-0:2018-09); |
| EN 60079-15:2010 | (PN-EN 60079-15:2010); |
| EN 60079-31:2014 | (PN-EN 60079-31:2014-10); |

Document history:

- Type examination certificate KDB 16ATEX0027X, 0 edition of 26.08.2016, initial certification.
- Type examination certificate KDB 16ATEX0027X, 1st edition of 30.08.2021, supersedes the certificate KDB 16ATEX0027X, 0 edition of 26.08.2016. New versions of the device have been implemented.

