



AC 038



EX-17



Główny Instytut Górnictwa  
Jednostka Certyfikująca  
Zespół Certyfikacji WYROBÓW  
KD „Barbara”  
ul. Podleska 72  
43-190 Mikołów,  
tel. (+48) 32 3246550  
fax. (+48) 32 3224931  
www.gig.katowice.pl

This certificate and its  
schedules may only be  
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Product certification program  
no: PCW-ISO/IEC-1b  
CODE ICS 13.230

# [1] EC-TYPE EXAMINATION CERTIFICATE



[2] Equipment, protective systems and components intended for use in  
potentially explosive atmospheres - Directive 94/9/EC

[3] EC – type examination certificate:

**KDB 09ATEX023X**

[4] Equipment or protective system:

**Cage unit ECHO/AK**

[5] Manufacturer:

**CARBONEX sp. z o.o.**

[6] Address:

**ul. Budowlana 5g, 40-301 Katowice, Poland**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this  
certificate and the documents therein referred to.

[8] Główny Instytut Górnictwa, Notified Body number 1453 in accordance with Article 9 of  
Directive 94/9/EC of 23 March 1994, certifies that this equipment and protective system has  
been found to comply with the Essential Health and Safety Requirements relating to the  
design and construction of equipment and protective systems intended for use in potentially  
explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report  
KDB No. 09.033 [T-6419]

[9] Compliance with the Essential Health and Safety Requirements has been assured by  
compliance with:

EN 60079-0:2006; EN 60079-11:2007

EN 50303:2000

[10] If the sign „X“ is placed after the certificate number, it indicates that the equipment or  
protective system is subject to special conditions for safe use specified in the schedule to this  
certificate.

[11] This EC-type examination certificate relates only to the design and construction of the  
specified equipment and protective system in accordance with Directive 94/9/EC.  
Further requirements of the Directive may apply to the manufacturing process and supply of  
this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

**Ex I M1**  
**Ex ia I**

Specjalista ds. Certyfikacji  
Urządzeń Przeciwwybuchowych

dr inż. Michał Górny



KIEROWNIK  
Zespołu Certyfikacji WYROBÓW  
KD „BARBARA” Mikołów  
dr hab. inż. Krzysztof Cybulski, prof. GIG

Date of issue: 23.02.2009

Date of English version: 28.07.2014

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## SCHEDULE

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### EC-Type Examination Certificate KDB 09ATEX023X

**[15] Description:**

The cage unit is a part of a wireless shaft communication device "ECHO" and it consists of:

- a cage device;
  - a pair of couplers installed on the hoist or guide rope;
- alternatively:
- a junction box, type STK/E (OBAC 05 ATEX 289);
  - EFG or EPG manipulator (simple apparatus);
  - position sensor of the hoisting sledge (switch – simple apparatus);

The following types are planned:

Due to destiny:

- P version – two-way audio communication and broadcasting signals
- S version – as above, and the option for controlling the hoisting machine
- FG version – two-way audio communication and broadcasting signals in shafts sinking from gin tub
- PG version – two-way audio communication and broadcasting signals in shafts sinking from platforms.

Due to the working frequency:

- A version – frequency 32kHz and 64kHz;
- B version – frequency 48kHz and 80kHz.

The cage assembly is fed from an integrated battery BAKS-9 (charging outside explosive atmosphere).

**Technical parameters:**

Battery supply	12V DC
Current consumption	max. 300mA
Degree of protection	IP54
Inductivity of the couplers:	
SK-32, SS-32	178µH +25µH/-15µH
SK-48, SS-48	80µH +20µH/-10µH
SK-64, SS-64, SK-80, SS-80	40µH +15µH/-5µH



## SCHEDULE

### EC-Type Examination Certificate KDB 09ATEX023X

Maximum output parameters:

1. Adherence sensor socket – passive contact
  - $U_o=15V$  DC
  - $I_o=0.0125A$
2. Manipulator socket:
  - 2.1 Outputs for the connection of contacts of buttons
    - $U_o=15V$  DC
    - $I_o=2.5mA$
  - 2.2 Output to the loudspeaker
    - $U_o=7.14V$
    - $I_o=0.3A$
    - $C_i=300pF$

**[16] Test report:**

Report no. KDB Nr 09.033

**[17] Special conditions for safe use:**

- the power supply of the surface part of the shaft communication device “ECHO” must be equipped with a safety transformer TS 25/009 (open-circuit voltage 17,1V  $\pm 1\%$ )

**[18] Essential health and safety requirements:**

Met by compliance with standards listed below:

- EN 60079-0:2006 (PN-EN 60079-0:2006);
- EN 60079-11:2007 (PN-EN 60079-11:2007);
- EN 50303:2000 (PN-EN 50303:2004);







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**SUPPLEMENT No 1**  
**to EC-TYPE EXAMINATION CERTIFICATE**  
**KDB 09ATEX023X**

[2] Equipment, protective systems and components intended for use in potentially explosive atmospheres - Directive 94/9/EC

[3] Equipment and protective system:

**Cage unit ECHO/AK**

[4] Manufacturer:

**CARBONEX sp. z o.o.**

[5] Address:

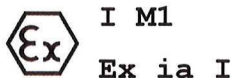
**ul. Budowlana 19,  
41-100 Siemianowice Śląskie, Poland**

[6] Changes were introduced to design or construction of component in accordance with the specification set out in the Schedule attached to this certificate and the documents therein referred to.

This document shall be held with the original Certificate.

The examination and test results are recorded in confidential report  
KDB No. 09.033-1 [T-6419]

[7] Marking:



[8] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2006 (PN-EN 60079-0:2009);

EN 60079-11:2007 (PN-EN 60079-11:2010);

EN 50303:2000 (PN-EN 50303:2004);

[9] The marking will not be changed

Specjalista ds. Certyfikacji  
Urządzeń Przeciwwybuchowych  
dr inż. Michał Górny



KIEROWNIK  
Zespołu Certyfikacji WYROBÓW  
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dr hab. inż. Krzysztof Cybulski, prof. GIG

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## SCHEDULE

[11]

**Supplement no 1 to EC-Type Examination Certificate KDB 09ATEX023X**

[12] **Description of the variation to the equipment or protective system:**

1. Option of alternative feeding from an external battery, type BZAK—certificate KDB 10ATEX078X
2. Introduction of two additional types of execution, differing in terms of the working frequency:
  - C version – frequency 112kHz and 144kHz;
  - D version – frequency 128kHz and 160kHz.

### **Technical parameters:**

Battery supply	12V DC
Current consumption	max. 300mA
Degree of protection	IP54
Inductivity of the couplers:	
SK-32, SS-32	178µH +25µH/-15µH
SK-48, SS-48	80µH +20µH/-10H
SK-64, SS-64, SK-80, SS-80	40µH +15µH/-5µH

**Maximum output parameters:** - as in the certificate KDB 09ATEX023X

[13] **Special conditions for safe use:**

As in the certificate KDB 09ATEX023X





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[1] **SUPPLEMENT No 2**  
**to EC-TYPE EXAMINATION CERTIFICATE**  
**KDB 09ATEX023X**

[2] Equipment, protective systems and components intended for use in potentially explosive atmospheres - Directive 94/9/EC

[3] Equipment and protective system:

**Cage unit ECHO/AK**

[4] Manufacturer:

**CARBONEX sp. z o.o.**

[5] Address:


**ul. Budowlana 19,  
41-100 Siemianowice Śląskie, Poland**

[6] Changes were introduced to design or construction of component in accordance with the specification set out in the Schedule attached to this certificate and the documents therein referred to.

This document shall be held with the original Certificate.

The examination and test results are recorded in confidential report  
KDB No. 09.033-2 [T-6419]

[7] Marking:

 **I M1 Ex ia I**


[8] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2009 (PN-EN 60079-0:2009);

EN 60079-11:2012 (PN-EN 60079-11:2012);

EN 50303:2000 (PN-EN 50303:2004);

[9] The marking will change to:

 **I M1 Ex ia I Ma**

Specjalista ds. Certyfikacji  
Urządzeń Przeciwwybuchowych

dr inż. Michał Górny



KIEROWNIK  
Zespołu Certyfikacji WYROBÓW  
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## SCHEDULE

[11]

### Supplement no 2 to EC-Type Examination Certificate KDB 09ATEX023X

[12] **Description of the variation to the equipment or protective system:**

The producer has adjusted the device to the requirements of the standards: EN 60079-0:2009 EN 60079-11:2012, EN 50303:2000 (PN-EN 60079-0:2009, PN-EN 60079-11:2012, PN-EN 50303:2004) and has introduced modifications consisting in:

- The application of an additional STK casing, produced by Telvis sp. z o.o., which has been equipped with a magnetic key,
- Development of an ESM manipulator, equipped with buttons, electroluminescent diodes and a microphone/speaker system,
- The application of 2 additional connectors in the cage assembly.

After introducing these modifications the type of the device was changed into ECHO/AK-SM.

[13] **Special conditions for safe use:**

- Without changes





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[1] **SUPPLEMENT No 3**  
**to EC-TYPE EXAMINATION CERTIFICATE**  
**KDB 09ATEX023X**

[2] Equipment, protective systems and components intended for use in potentially explosive atmospheres - Directive 94/9/EC

[3] Equipment and protective system:

**Cage unit ECHO/ASi- ...**

[4] Manufacturer:

**CARBONEX sp. z o.o.**

[5] Address:


**ul. Budowlana 19,  
41-100 Siemianowice Śląskie, Poland**

[6] Changes were introduced to design or construction of component in accordance with the specification set out in the Schedule attached to this certificate and the documents therein referred to.

This document shall be held with the original Certificate.

The examination and test results are recorded in confidential report  
KDB No. 09.033-3 [T-6419]

[7] Marking:

 **I M1 Ex ia I**

[8] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013  
(PN-EN 60079-0:2013-03 + A11:2014-03);  
EN 60079-11:2012 (PN-EN 60079-11:2012);  
EN 50303:2000 (PN-EN 50303:2004);

[9] The marking will not be changed

Specjalista ds. Certyfikacji  
Urządzeń Przeciwwybuchowych

dr inż. Michał Górny



KIEROWNIK  
Zespołu Certyfikacji WYROBÓW  
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## SCHEDULE

[11]

**Supplement no 3 to EC-Type Examination Certificate KDB 09ATEX023X**

[12] **Description of the variation to the equipment or protective system:**

Producer has made changes:

- Buttons and a part of switches (except for the power switch) have been removed from the front panel of ECHO/AK device, the number of light-emitting diode has been increased, the housing has been adapted to the requirements of IP65
- The splitter box type STK5 produced by Przedsiębiorstwo Usługowo-Produkcyjne Telvis Sp. z o.o. has been applied. Its explosion-proof protection has been confirmed by the EC-Type Examination Certificate OBAC 05ATEX289 and marked  I M1 Ex ia I,
- Two EM type microphones have been applied. Microphones are a modified version of the manipulator type EFG produced by Carbonex Sp. z o.o.,
- The WN-1 type foot switch has been applied as a switch broadcast/reception. The foot switch is produced by Carbonex Sp. z o.o.,
- Technical parameters and documentation have been updated
- The device has been adapted to the requirements of the standards listed in paragraph 8 of this document.

The device with changes have been marked accordingly:

- ECHO/ASi-YY-X, in which YY is the software version (FG, PG), X is frequency version A, B, C, D.

The analysis states that the device meets the requirements of standards listed above and is consistent with the requirements of Rozporządzenie MG z dnia 22.12.2005r. Dz.U. Nr 263, Poz.2203 (Dyrektywa 94/4/WE)

### Technical parameters:

Socket ZG2:  $U_i=15,8V$ ,  $I_i=1,5A$ ,  $Li\sim 0$ ,  $Ci\sim 0$ .

Socket ZG4:  $U_i=16V$ ,  $I_i=2A$ ,  $P_i=3,3W$ ,  $Li\sim 0$ ,  $Ci\sim 0$ .

Degree of protection:	IP65	Echo/AK and Echo/ASi device
	IP65	STK5 splitter box
	IP54	EM type microphone
	IP54	foot switch WN-1

[13] **Special conditions for safe use:**

- Without changes