

(1) EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) No. of EC-Type Examination Certificate: **BVS 14 ATEX E 178 X**
- (4) Equipment: **Self contained breathing apparatus electronics type G1**
- (5) Manufacturer: **Mine Safety Appliances Company**
- (6) Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 the Test and Assessment Report BVS PP 15.2002 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 General requirements**
EN 60079-11:2012 Intrinsic Safety "i"
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, dated 2015-01-05



Certification body



Special services unit

- (13) Appendix to
- (14) **EC-Type Examination Certificate
BVS 14 ATEX E 178 X**
- (15) 15.1 Subject and type

Self contained breathing apparatus electronics type G1

15.2 Description

The self contained breathing apparatus electronics type G1 is used as part of the G1 self contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self contained breathing apparatus electronics type G1 consists of

- 1 alkaline battery pack Model 7-2813-1
- 1 power module Model 7-2812-1 or Model 7-2811-1 TELEMETRY
- 1 speaker module Model 7-2827-1
- 1 control module Model 10152107 (bar) or Model 10152108 (MPa)
- 1 MMR module Model G1 MMR

The speaker module, the control module and the MMR module are fixed connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The self contained breathing apparatus electronics type G1 contains portable tags RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and optional one RF module type alphaLLR IECEx.

The G1 personal protective equipment (PPE) is not part of this EC-Type Examination Certificate, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.

15.3 Parameters

15.3.1 Alkaline battery pack (6 cells, size C, LR14)

Nominal voltage 9 V

The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.

15.3.2 RF module type alphaLRR IECEx (mounted and connected inside of the power module)

frequency 868 MHz
Maximum RF output power 0.5 W

15.3.3 RFID Tag type LOGI TAG™ 161 HF
(mounted inside of the power module, speaker module, control module and MMR module)

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceeded 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)

15.3.4 Bluetooth Module (connected inside of the power module)

frequency 2.4 GHz
Maximum RF output power 10 mW

15.3.5 RFID Module (connected inside of the power module)

frequency

13.56 MHz

Maximum RF output power

100 mW

15.3.6 Ambient temperature range

$-30\text{ °C} \leq T_a \leq +60\text{ °C}$

(16) Test and Assessment Report

BVS PP 15.2002 EG as of 2015-01-05

(17) Special conditions for safe use

Properly donning and doffing of the complete G1 self contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas.


Replace only batteries of the same type.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is $-30\text{ °C} \leq T_a \leq +60\text{ °C}$.

(1) 1st Supplement to the EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 14 ATEX E 178 X**
- (4) Equipment: **Self-contained breathing apparatus electronics type G1**
- (5) Manufacturer: **Mine Safety Appliances Company**
- (6) Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 the Test and Assessment Report BVS PP 15.2002 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 General requirements**
EN 60079-11:2012 Intrinsic Safety "i"
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, dated 2015-06-09



Certification body



Special services unit

- (13) Appendix to
- (14) **1st Supplement to the EC-Type Examination Certificate
BVS 14 ATEX E 178 X**

(15) 15.1 Subject and type

Self-contained breathing apparatus electronics type G1

15.2 Description

The power module Model 7-3007-1 TELEMETRY AUS was added.

The power module Model 7-3007-1 TELEMETRY AUS is identical to the previously certified power module Model 7-2811-1 TELEMETRY.

15.3 Parameters

Unchanged

(16) Test and Assessment Report

BVS PP 15.2002 EG as of 2015-06-09

(17) Special conditions for safe use

Unchanged

(1) 2nd Supplement to the EC-Type Examination Certificate

- (2) Equipment and protective systems intended for use
in potentially explosive atmospheres - Directive 94/9/EC
Supplement accordant with Annex III number 6
- (3) No. of EC-Type Examination Certificate: **BVS 14 ATEX E 178 X**
- (4) Equipment: **Self contained breathing apparatus electronics type G1**
- (5) Manufacturer: **Mine Safety Appliances Company, LLC**
- (6) Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment 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 the Test and Assessment Report BVS PP 15.2002 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- | | |
|-----------------------------------|-----------------------------|
| EN 60079-0:2012 + A11:2013 | General requirements |
| EN 60079-11:2012 | Intrinsic safety "i" |
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.
- (11) This supplement to the EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.
- (12) The marking of the equipment shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, dated 2015-12-07



Certification body



Special services unit



- (13) Appendix to
- (14) **2nd Supplement to the EC-Type Examination Certificate BVS 14 ATEX E 178 X**
- (15) 15.1 Subject and type

Self contained breathing apparatus electronics type G1

15.2 Description

The alternate supply G1 SCBA Rechargeable Lithium-Ion Battery Pack with certificate number FTZU 15 ATEX 0124U was added.

The Self-contained breathing apparatus electronics type G1 was tested in accordance to the standard EN 60079-0:2012+A11:2013.

The manufacturer name has changed to Mine Safety Appliances Company, LLC.

The self contained breathing apparatus electronics type G1 is used as part of the G1 self contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self contained breathing apparatus electronics type G1 consists of

- | | |
|----------------------------|--|
| 1 alkaline battery pack | Model 7-2813-1 or |
| 1 Lithium-Ion Battery Pack | G1 SCBA Rechargeable Lithium-Ion Battery Pack, P/N 10161002 (FTZU 15 ATEX 0124U) |
| 1 power module | Model 7-2812-1 or Model 7-2811-1 TELEMETRY or Model 7-3007-1 TELEMETRY AUS |
| 1 speaker module | Model 7-2827-1 |
| 1 control module | Model 10152107 (bar) or Model 10152108 (MPa) |
| 1 MMR module | Model G1 MMR |

The speaker module, the control module and the MMR module are fixed, connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U) is directly connected to the power module via an infallible connector. The disconnection and the charging of the battery is only allowed outside of the hazardous area (see Special conditions for safe use).

The self contained breathing apparatus electronics type G1 contains portable tags RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and optional one RF module type alphaLLR IECEx.

The G1 personal protective equipment (PPE) is not part of this Test Report, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.



15.3 Parameters

15.3.1 Alkaline battery pack (6 cells, size C, LR14)

Nominal voltage 9 V

The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.

15.3.2 G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U)

Nominal voltage 7.2 V

15.3.3 RF module type alphaLRR IECEx (mounted and connected inside of the power module)

frequency 868 MHz
Maximum RF output power 0.5 W

15.3.4 RFID Tag type LOGI TAG™ 161 HF

(mounted inside of the power module, speaker module, control module and MMR module)

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceeded 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)

15.3.5 Bluetooth Module (connected inside of the power module)

frequency 2.4 GHz
Maximum RF output power 10 mW

15.3.6 RFID Module (connected inside of the power module)

frequency 13.56 MHz
Maximum RF output power 100 mW

15.3.7 Ambient temperature range

- 30 °C ≤ T_a ≤ + 60 °C

(16) Test and Assessment Report

BVS PP 15.2002 EG as of 2015-12-07

(17) Special conditions for safe use

Properly donning and doffing of the complete G1 self contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas. Replace only batteries of the same type.

The disconnection of the G1 SCBA Lithium-Ion Rechargeable Battery Pack and the charging is only allowed in non-hazardous areas. Charging temperature: 0 °C up to + 45 °C.

The G1 SCBA Lithium-Ion Rechargeable Battery Pack shall only be connected to, and charged by, an intrinsically safe electrical supply output that limits the voltage and current to the values U_i = 10.5 V and I_i = 0.85 A.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is - 30 °C ≤ T_a ≤ + 60 °C.

EU-Type Examination Certificate Supplement 3

Change to Directive 2014/34/EU

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 14 ATEX E 178 X**

Product: **Self contained breathing apparatus electronics type G1**

Manufacturer: **Mine Safety Appliances Company, LLC**

Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**

This supplementary certificate extends EC-Type Examination Certificate No. BVS 14 ATEX E 178 X to apply to products designed and constructed in accordance with the specification set out in the Appendix of the said certificate but having any variations specified in the Appendix attached to this certificate and the documents therein referred to.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 15.2002 EU.

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

EN 60079-0:2012 + A11:2013 **General requirements**
EN 60079-11:2012 **Intrinsic Safety "i"**

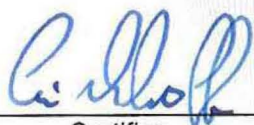
If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

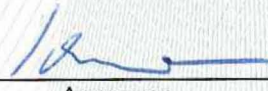
The marking of the product shall include the following:

⊕ Ex II 1G Ex ia IIC T4 Ga

DEKRA EXAM GmbH
Bochum, 2016-07-06



Certifier



Approver

13 **Appendix**
 14 **EU-Type Examination Certificate**

**BVS 14 ATEX E 178 X
 Supplement 3**

15 **Product description**
 15.1 **Subject and type**

Self contained breathing apparatus electronics type G1

15.2 **Description**

With this supplement the certificate is changed to Directive 2014/34/EU.
 (Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

Reason for the supplement:

Change to Directive 2014/34/EU

The mechanical and the electrical design were partly modified.

Description of Product

The self contained breathing apparatus electronics type G1 can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The self contained breathing apparatus electronics type G1 is used as part of the G1 self contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self contained breathing apparatus electronics type G1 consists of

- | | |
|----------------------------|--|
| 1 alkaline battery pack | Model 7-2813-1 or |
| 1 Lithium-Ion Battery Pack | G1 SCBA Rechargeable Lithium-Ion Battery Pack, P/N 10161002 (FTZU 15 ATEX 0124U) |
| 1 power module | Model 7-2812-1 or Model 7-2811-1 TELEMETRY or Model 7-3007-1 TELEMETRY AUS |
| 1 speaker module | Model 7-2827-1 |
| 1 control module | Model 10152107 (bar) or Model 10152108 (MPa) |
| 1 MMR module | Model G1 MMR |

The speaker module, the control module and the MMR module are fixed and connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U) is directly connected to the power module via an infallible connector. The disconnection and the charging of the battery is only allowed outside of the hazardous area (see Special conditions for safe use).

The self contained breathing apparatus electronics type G1 contains portable tags RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and optional one RF module type alphaLLR IECEx (BVS PP 05.2117 EG / N3).

The G1 personal protective equipment (PPE) is not part of this Test Report, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.

15.3 Parameters

- 15.3.1 Alkaline battery pack (6 cells, size C, LR14)
 - Nominal voltage 9 V
 - The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.
- 15.3.2 G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U)
 - Nominal voltage 7.2 V
- 15.3.3 RF module type alphaLRR IECEx (mounted and connected inside of the power module)
 - frequency 868 MHz
 - Maximum RF output power 0.5 W
- 15.3.4 RFID Tag type LOGI TAG™ 161 HF (mounted inside of the power module, speaker module, control module and MMR module)
 - The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)
- 15.3.5 Bluetooth Module (connected inside of the power module)
 - frequency 2.4 GHz
 - Maximum RF output power 10 mW
- 15.3.6 RFID Module (connected inside of the power module)
 - frequency 13.56 MHz
 - Maximum RF output power 100 mW
- 15.3.7 Ambient temperature range $-30\text{ °C} \leq T_a \leq +60\text{ °C}$

16 Report Number

BVS PP 15.2002 EU, as of 2016-07-06

17 Special Conditions for Use

Properly donning and doffing of the complete G1 self contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas. Replace only batteries of the same type.

The disconnection of the G1 SCBA Lithium-Ion Rechargeable Battery Pack and the charging is only allowed in non-hazardous areas. Charging temperature: 0 °C up to + 45 °C.

The G1 SCBA Lithium-Ion Rechargeable Battery Pack shall only be connected to, and charged by, an intrinsically safe electrical supply output that limits the voltage and current to the values $U_i = 10.5\text{ V}$ and $I_i = 0.85\text{ A}$.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is $-30\text{ °C} \leq T_a \leq +60\text{ °C}$.

EU-Type Examination Certificate Supplement 4

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 14 ATEX E 178 X**

Product: **Self contained breathing apparatus electronics type G1**

Manufacturer: **Mine Safety Appliances Company, LLC**

Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**

This supplementary certificate extends EU-Type Examination Certificate No. BVS 14 ATEX E 178 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. BVS PP 15.2002 EU.

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

EN 60079-0:2012 + A11:2013 **General requirements**
EN 60079-11:2012 **Intrinsic Safety "i"**

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

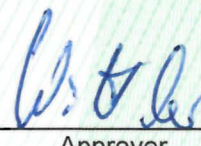
The marking of the product shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, 2017-10-24



Certifier



Approver

13 **Appendix**

14 **EU-Type Examination Certificate**

**BVS 14 ATEX E 178 X
Supplement 4**

15 **Product description**

15.1 **Subject and type**

Self contained breathing apparatus electronics type G1

15.2 **Description**

Reason for this supplement:

The mechanical and the electrical design were partly modified.

The control module (with TIC) Model 10175023 (bar) and Model 10175022 (MPa) was added.

Description of product:

The self contained breathing apparatus electronics type G1 is used as part of the G1 self-contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self contained breathing apparatus electronics type G1 consists of

1 alkaline battery pack	Model 7-2813-1 or
1 Lithium-Ion Battery Pack	G1 SCBA Rechargeable Lithium-Ion Battery Pack, P/N 10161002 (FTZU 15 ATEX 0124U)
1 power module	Model 7-2812-1 or Model 7-2811-1 TELEMETRY or Model 7-3007-1 TELEMETRY AUS
1 speaker module	Model 7-2827-1
1 control module	Model 10152107 (bar) or Model 10152108 (MPa) or
1 control module (with TIC)	Model 10175023 (bar) or Model 10175022 (MPa)
1 MMR module	Model G1 MMR

The speaker module, the control module and the MMR module are fixed connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U) is directly connected to the power module via an infallible connector. The disconnection and the charging of the battery is only allowed outside of the hazardous area (see Special conditions for safe use).

The self contained breathing apparatus electronics type G1 contains portable tags RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and optional one RF module type alphaLLR IECEx (BVS PP 05.2117 EG / N3).

The G1 personal protective equipment (PPE) is not part of this EU-Type Examination Certificate, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.

15.3 Parameters

15.3.1 Alkaline battery pack (6 cells, size C, LR14)

Nominal voltage 9 V

The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.

15.3.2 G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U)

Nominal voltage 7.2 V

15.3.3 RF module type alphaLRR IECEx (mounted and connected inside of the power module)

frequency 868 MHz
Maximum RF output power 0.5 W

15.3.4 RFID Tag type LOGI TAG™ 161 HF (mounted inside of the power module, speaker module, control module and MMR module)

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)

15.3.5 Bluetooth Module (connected inside of the power module)

frequency 2.4 GHz
Maximum RF output power 10 mW

15.3.6 RFID Module (connected inside of the power module)

frequency 13.56 MHz
Maximum RF output power 100 mW

15.3.7 Ambient temperature range $-30\text{ °C} \leq T_a \leq +60\text{ °C}$

16 Report Number

BVS PP 15.2002 EU, as of 2017-10-24

17 Special Conditions for Use

Properly donning and doffing of the complete G1 self-contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self-contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas. Replace only batteries of the same type.

The disconnection of the G1 SCBA Lithium-Ion Rechargeable Battery Pack and the charging is only allowed in non-hazardous areas. Charging temperature: 0 °C up to +45 °C.

The G1 SCBA Lithium-Ion Rechargeable Battery Pack shall only be connected to, and charged by, an intrinsically safe electrical supply output that limits the voltage and current to the values $U_i = 10.5\text{ V}$ and $I_i = 0.85\text{ A}$.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is $-30\text{ °C} \leq T_a \leq +60\text{ °C}$.



18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.



EU-Type Examination Certificate Supplement 5

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 14 ATEX E 178 X**

Product: **Self contained breathing apparatus electronics type G1**

Manufacturer: **Mine Safety Appliances Company, LLC**

Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**

This supplementary certificate extends EU-Type Examination Certificate No. BVS 14 ATEX E 178 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 15.2002 EU.

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

EN 60079-0:2012 + A11:2013 **General requirements**
EN 60079-11:2012 **Intrinsic Safety "i"**

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.


The marking of the product shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, 2018-01-23



Certifier



Approver

13 **Appendix**

14 **EU-Type Examination Certificate**

**BVS 14 ATEX E 178 X
Supplement 5**

15 **Product description**

15.1 **Subject and type**

Self contained breathing apparatus electronics type G1

15.2 **Description**

Reason for this supplement:

The electrical design of the power module was alternatively partly modified.
(Version without RF module type alphaLRR IECEx)

Description of product:

The self contained breathing apparatus electronics type G1 is used as part of the G1 self-contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self contained breathing apparatus electronics type G1 consists of

1 alkaline battery pack	Model 7-2813-1 or
1 Lithium-Ion Battery Pack	G1 SCBA Rechargeable Lithium-Ion Battery Pack, P/N 10161002 (FTZU 15 ATEX 0124U)
1 power module	Model 7-2812-1 or Model 7-2811-1 TELEMETRY or Model 7-3007-1 TELEMETRY AUS
1 speaker module	Model 7-2827-1
1 control module	Model 10152107 (bar) or Model 10152108 (MPa) or
1 control module (with TIC)	Model 10175023 (bar) or Model 10175022 (MPa)
1 MMR module	Model G1 MMR

The speaker module, the control module and the MMR module are fix connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U) is directly connected to the power module via an infallible connector. The disconnection and the charging of the battery is only allowed outside of the hazardous area (see Special conditions for safe use).

The self contained breathing apparatus electronics type G1 contains portable tags
RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and
optional by one RF module type alphaLRR IECEx (BVS PP 05.2117 EG / N3).

The G1 personal protective equipment (PPE) is not part of this EU-Type Examination Certificate, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.

15.3 **Parameters**

15.3.1 Alkaline battery pack (6 cells, size C, LR14)

Nominal voltage 9 V

The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.

15.3.2 G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U)

Nominal voltage 7.2 V

15.3.3 RF module type alphaLRR IECEx (mounted and connected optionally inside of the power module)

frequency 868 MHz

Maximum RF output power 0.5 W

15.3.4 RFID Tag type LOGI TAG™ 161 HF

(mounted inside of the power module, speaker module, control module and MMR module)

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)

15.3.5 Bluetooth Module (connected inside of the power module)

frequency 2.4 GHz

Maximum RF output power 10 mW

15.3.6 RFID Module (connected inside of the power module)

frequency 13.56 MHz

Maximum RF output power 100 mW

15.3.7 Ambient temperature range

$-30\text{ °C} \leq T_a \leq +60\text{ °C}$

16 **Report Number**

BVS PP 15.2002 EU, as of 2018-01-23

17 **Special Conditions for Use**

Properly donning and doffing of the complete G1 self-contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self-contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas. Replace only batteries of the same type.

The disconnection of the G1 SCBA Lithium-Ion Rechargeable Battery Pack and the charging is only allowed in non-hazardous areas. Charging temperature: 0 °C up to +45 °C.

The G1 SCBA Lithium-Ion Rechargeable Battery Pack shall only be connected to, and charged by, an intrinsically safe electrical supply output that limits the voltage and current to the values $U_i = 10.5\text{ V}$ and $I_i = 0.85\text{ A}$.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is $-30\text{ °C} \leq T_a \leq +60\text{ °C}$.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

EU-Type Examination Certificate Supplement 6

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 14 ATEX E 178 X**

Product: **Self contained breathing apparatus electronics type G1**

Manufacturer: **Mine Safety Appliances Company, LLC**

Address: **1000 Cranberry Woods Drive, Cranberry Township, PA 16066-5296, USA**

This supplementary certificate extends EU-Type Examination Certificate No. BVS 14 ATEX E 178 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential Report No. BVS PP 15.2002 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN 60079-0:2012 + A11:2013 **General requirements**
EN 60079-11:2012 **Intrinsic Safety "i"**

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.


This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:

 **II 1G Ex ia IIC T4 Ga**

DEKRA EXAM GmbH
Bochum, 2018-10-15

Certifier



Approver

13 **Appendix**
 14 **EU-Type Examination Certificate**

**BVS 14 ATEX E 178 X
 Supplement 6**

15 **Product description**

15.1 **Subject and type**

Self contained breathing apparatus electronics type G1

15.2 **Description**

Reason for this supplement:

The electrical design of the power module was alternatively partly modified.
 (Version with RF-module type LRR SG)

The mechanical design was partly modified.

Description of product:

The self-contained breathing apparatus electronics type G1 is used as part of the G1 self-contained breathing apparatus (Personal protective equipment - PPE) for monitoring and controlling.

The self-contained breathing apparatus electronics type G1 consists of

- | | |
|-----------------------------|---|
| 1 alkaline battery pack | Model 7-2813-1 or |
| 1 Lithium-Ion Battery Pack | G1 SCBA Rechargeable Lithium-Ion Battery Pack,
P/N 10161002 (FTZU 15 ATEX 0124U) |
| 1 power module | Model 7-2812-1 or Model 7-2811-1 TELEMETRY or
Model 7-3007-1 TELEMETRY AUS |
| 1 speaker module | Model 7-2827-1 |
| 1 control module | Model 10152107 (bar) or Model 10152108 (MPa) or |
| 1 control module (with TIC) | Model 10175023 (bar) or Model 10175022 (MPa) |
| 1 MMR module | Model G1 MMR |

The speaker module, the control module and the MMR module are fix connected via 3 special designed cables to the power module.

The alkaline battery pack (6 alkaline cells) is directly connected to the power module via an infallible connector. The disconnection of the alkaline battery pack and the changing of the batteries is only allowed outside of the hazardous area.

The G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U) is directly connected to the power module via an infallible connector. The disconnection and the charging of the battery is only allowed outside of the hazardous area (see Special conditions for safe use).

The self-contained breathing apparatus electronics type G1 contains portable tags RFID Tag type LOGI TAG™ 161 HF (FTZU 11 ATEX 0177X with 2nd Supplement) and optional by one RF module type alphaLRR IECEX (BVS PP 05.2117 EG / N3) or one RF-module type LRR SG (BVS PP 18.2064 EU).

The G1 personal protective equipment (PPE) is not part of this EU-Type Examination Certificate, only the electronic parts and the interconnection between the electronic parts were evaluated and tested.

15.3 Parameters

15.3.1 Alkaline battery pack (6 cells, size C, LR14)

Nominal voltage 9 V

The approved Alkaline battery types are listed in the manufacturer instructions of Mine Safety Appliances Company.

15.3.2 G1 SCBA Rechargeable Lithium-Ion Battery Pack (FTZU 15 ATEX 0124U)

Nominal voltage 7.2 V

15.3.3 RF module type alphaLRR IECEx (mounted and connected optionally inside of the power module)

frequency 868 MHz

Maximum RF output power 0.5 W

15.3.4 RF-module type LRR SG (mounted and connected optionally inside of the power module)

frequency band 868 MHz

frequency band 915 MHz

Maximum RF output power 2 W

15.3.5 RFID Tag type LOGI TAG™ 161 HF (mounted inside of the power module, speaker module, control module and MMR module)

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC. (Value from FTZU 11 ATEX 0177X)

15.3.6 Bluetooth Module (connected inside of the power module)

frequency 2.4 GHz

Maximum RF output power 10 mW

15.3.7 RFID Module (connected inside of the power module)

frequency 13.56 MHz

Maximum RF output power 100 mW

15.3.8 Ambient temperature range $-30\text{ °C} \leq T_a \leq +60\text{ °C}$

16 Report Number

BVS PP 15.2002 EU, as of 2018-10-15

17 Special Conditions for Use

Properly donning and doffing of the complete G1 self-contained breathing apparatus shall be done only in non-hazardous areas.

Before entering the hazardous area, the complete self-contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.

The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non-hazardous areas. Replace only batteries of the same type.

The disconnection of the G1 SCBA Lithium-Ion Rechargeable Battery Pack and the charging is only allowed in non-hazardous areas. Charging temperature: 0 °C up to +45 °C.

The G1 SCBA Lithium-Ion Rechargeable Battery Pack shall only be connected to, and charged by, an intrinsically safe electrical supply output that limits the voltage and current to the values $U_i = 10.5\text{ V}$ and $I_i = 0.85\text{ A}$.

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

The ambient temperature range is $-30\text{ °C} \leq T_a \leq +60\text{ °C}$.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

