



Translation

EC-Type Examination Certificate

(1) - Directive 94/9/EC -
Equipment and protective systems intended for use
in potentially explosive atmospheres

(3) BVS 06 ATEX E 088

(4) Equipment: Pressurised enclosure systems types F 850 S and F 860 S

(5) Manufacturer: Gönzheimer Elektronik GmbH

(6) Address: 67433 Neustadt/Weinstraße, Germany

(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 EXAM BBG Prüf- und Zertifizier 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 06.2078 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

Table with 4 columns: Standard number, Description, Standard number, Description. Includes EN 60079-0:2004, EN 60079-7:2003, EN 60079-18:2004, EN 61241-1:2004, EN 954-1:1996, EN 60079-2:2004, FDIS IEC 60079-11:2005, IEC 61241-0:2004, IEC 61241-11:2005.

(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:

Ex II 2G for FS850S, FS860S and BT 851 details see 15.1
II 2D for FS850S and BT 851

EXAM BBG Prüf- und Zertifizier GmbH

Bochum, dated 25th July 2006

signed: Migenda

signed: Dr. Arnold

Certification body

Special services unit

(13)

Appendix to

(14)

EC-Type Examination Certificate

BVS 06 ATEX E 088

(15) 15.1 Subject and type

Pressurised enclosure systems of types F 850 S and F 860 S

Control unit type FS850S:

II 2G Ex e mb [ib] [px] IIC T6	-20 °C ≤ T _A ≤ +45 °C
II 2G Ex e mb [ib] [px] IIC T4	-20 °C ≤ T _A ≤ +60 °C
II 2D Ex tD [ibD] [pD] A21 IP 65 T 70 °C	-20 °C ≤ T _A ≤ +60 °C

Control unit type FS850S.***HT:

II 2G Ex e mb [ib] [px] IIC T4	-20 °C ≤ T _A ≤ +70 °C
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Control unit type FS860S:

II 2G Ex e mb [ib] [px] IIC T6	-20 °C ≤ T _A ≤ +45 °C
II 2G Ex e mb [ib] [px] IIC T4	-20 °C ≤ T _A ≤ +60 °C

Operator panel BT 851:

II 2G Ex ib IIC T6	
II 2D Ex ibD 21 T 80 °C	

15.2 Description

The pressurised enclosure systems of types F 850 S and F 860 S are used to assemble explosion proof electrical equipment for the type of protection Pressurised Enclosure (Pressurisation) according to EN/IEC 60079-2 and EN/IEC 61241-4. They consist of the control units FS 850 S or FS 860 S and the operator panel BT 851 plus additional accessory equipment.

The functional safety of the pressurised enclosure system type F 850 S was tested according to the standard "Safety devices required for the safe functioning of equipment with respect to explosion risks". It complies with category 3 of this standard.

15.3 Parameters

Power supply (mains) (Terminals 15 to 18)	230, 220, 120, 110, 24 V AC, or. 24 V DC Safety-relevant maximum value U _m = 253 V								
Valve fuse (Terminals 25/26)	accessory valve fuse of type SI850								
Valve connections (Terminals 21/22 and 23/24)	Same voltage as power supply (mains)								
Proportional valve connection (Terminals 19/20)	Same voltage as power supply (mains)								
Contact circuits (Terminals 11/12 and 13/14)	<table border="0"> <tr> <td>ACV</td> <td>DCV</td> </tr> <tr> <td>U = 250 V</td> <td>U = 30 V</td> </tr> <tr> <td>I = 5 A</td> <td>I = 5 A</td> </tr> <tr> <td>cosφ = 0.7</td> <td>P = 150 W</td> </tr> </table>	ACV	DCV	U = 250 V	U = 30 V	I = 5 A	I = 5 A	cosφ = 0.7	P = 150 W
ACV	DCV								
U = 250 V	U = 30 V								
I = 5 A	I = 5 A								
cosφ = 0.7	P = 150 W								

Intrinsically safe connections

in type of protection Intrinsic Safety Ex ib IIC

The maximum values, the maximum permitted values and the outer reactances as well as the numbers of the terminals are shown in the table below:

Terminal	U ₀	I ₀	P ₀	L ₀	C ₀
1, 9	8.61 V	51 mA	110 mW	10 mH	2 µF
4	8.61 V	10 mA	22 mW	10 mH	2 µF
3	8.61 V	20 mA	44 mW	10 mH	2 µF
5, 6, 10	8.61 V	6 mA	13 mW		
2	Mass connection of circuits				

The intrinsically safe circuits (terminals 1 to 10) are safely galvanically separated from all other circuits up to the peak value of the nominal voltage of 375 V.

The permitted ambient temperature range is for temperature class T6 -20 °C to 45 °C and for temperature class T4: -20 °C to 60 °C.

For control unit type FS850S.*.*.HT (only T4) the permitted ambient temperature range is -20 °C to 70 °C.

(16) Test and assessment report

BVS PP 06.2078 EG, Stand 25.07.2006

(17) Special conditions for safe use

None

We confirm the correctness of the translation from the German original. In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 09.07.2012
BVS-Schu/Ar E 1215/12

Certification body

Special services unit



Translation

1st Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

to the EC-Type Examination Certificate BVS 06 ATEX E 088

Equipment: Pressurised enclosure systems types F 850 S and F 860 S
Manufacturer: Gönzheimer Elektronik GmbH
Address: 67433 Neustadt/Weinstraße, Germany

Description

The control units of the pressurised enclosure systems may now also be manufactured according to testing documents listed in the pertinent test and assessment report.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

EN 60079-0:2004	General requirements	EN 60079-2:2004	Pressurised Enclosure 'p'
EN 60079-7:2003	Increased Safety 'e'	FDIS IEC 60079-11:2005	Intrinsic Safety 'i'
EN 60079-18:2004	Encapsulation 'm'	IEC 61241-0:2004	General requirements
EN 61241-1:2004	Protection by Enclosures 'tD'	IEC 61241-11:2005	Intrinsically safe equipment
EN 954-1:1996	Safety devices required for the safe functioning of equipment with respect to explosion risks		

The marking of the equipment shall include the following:

for type FS850S

II 2G Ex e mb [ib] [px] IIC T6 or

II 2G Ex e mb [ib] [px] IIC T4 and

II 2D Ex tD [ibD] [pD] A21 IP 65 T 70 °C

for type FS850S.*.*.HT

II 2G Ex e mb [ib] [px] IIC T4

for type FS860S

II 2G Ex e mb [ib] [px] IIC T6 or

II 2G Ex e mb [ib] [px] IIC T4

for type BT 851

II 2G Ex ib IIC T6 and

II 2D Ex ibD 21 T 80 °C



Test and assessment report
BVS PP 06.2078 EG, as of 23.10.2006

EXAM BBG Prüf- und Zertifizier GmbH
Bochum, dated 23rd October 2006

signed: Dr. Jockers


signed: Dr. Eickhoff

Certification body


Special services unit

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 09.07.2012
BVS-Schu/Ar E 1215/12



Certification body



Special services unit

To the newly added control units the following constant flow-through volume applies in relation to the monitored minimum overpressure:

Minimum overpressure	Constant flow-through volume	
	FS850S... .BY1,2	FS850S... .BY1,5
80 Pa	0.013 l/s	0.020 l/s
100 Pa	0.014 l/s	0.022 l/s
200 Pa	0.020 l/s	0.031 l/s
400 Pa	0.028 l/s	0.044 l/s
600 Pa	0.034 l/s	0.054 l/s
800 Pa	0.040 l/s	0.062 l/s
1000 Pa	0.044 l/s	0.070 l/s

Special conditions for safe use

None

Test and assessment report

BVS PP 06.2078 EG, as of 29.05.2007

DEKRA EXAM GmbH
Bochum, 29th May 2007

signed: Dr. Jockers

signed: Dr. Eickhoff

Certification body

Special services unit

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 09.07.2012
BVS-Schu/Ar E 1215/12

Certification body

Special services unit



Translation

2nd Supplement

(Supplement in accordance with Directive 94/9/EC, Annex III number 6)

to the EC-Type Examination Certificate BVS 06 ATEX E 088

Equipment: Pressurised enclosure systems types F 850 S and F 860 S
Manufacturer: Gönzheimer Elektronik GmbH
Address: 67433 Neustadt/Weinstraße, Germany

Description

The pressurised enclosure systems are supplemented by the following control units:

FS850S.*.*. BY1,2
FS850S.*.*. BY1,5
FS850S.*.*.HT. BY1,2
FS850S.*.*.HT. BY1,5.

These control units use an additional flow nozzle in the pressure monitoring module to achieve a continual purging which helps to control the minimum overpressure needed.

The Essential Health and Safety Requirements of the modified version are assured by compliance with:

EN 60079-0:2006	General requirements
EN 60079-2:2004	Pressurised Enclosure 'p'
EN 60079-7:2003	Increased Safety 'e'
EN 60079-11:2007	Intrinsic Safety 'i'
EN 60079-18:2004	Encapsulation 'm'
EN 954-1:1996	Safety devices required for the safe functioning of equipment with respect to explosion risks - general design principles
EN 61241-0:2006	General requirements
EN 61241-1:2004	Protection by Enclosure 'tD'
IEC 61241-11:2005	Intrinsically safe equipment 'iD'

The marking of the equipment remains unchanged.

Parameters

All electrical parameters remain unchanged.

Translation

(1) **3rd Supplement to the
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 06 ATEX E 088**

(4) Equipment: **Pressurised Enclosed Systems Types 850S and 860S**

(5) Manufacturer: **Gönzheimer Elektronik GmbH**

(6) Address: **67433 Neustadt an der Weinstraße, Germany**

(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 06.2078 EG.


(9) The Essential Health and Safety Requirements are assured by compliance with:

- IEC 60079-0:2011 **General requirements**
- EN 60079-2:2007 **Pressurised Enclosure 'p'**
- EN 60079-7:2007 **Increased Safety 'e'**
- EN 60079-11:2012 **Intrinsic Safety 'i'**
- EN 60079-18:2009 **Encapsulation 'm'**
- EN 60079-31:2009 **Protection by Enclosure 't'**
- EN 50495:2010 **Safety devices required for the safe functioning of equipment with respect to explosion risks**

(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 2G see section 15.1**
II 2D see section 15.1

DEKRA EXAM GmbH
Bochum, dated 10th May 2012

Signed: Simanski

Signed: Hauke

Certification body

Special services unit

- (13) Appendix to
- (14) **3rd Supplement to the EC-Type Examination Certificate
BVS 06 ATEX E 088**
- (15) 15.1 Subject and type

Pressurised enclosure systems of the following types:
type F850S.***, type F850S.***.BY1,*, type F860S.*** type F860S.***.BY1,*,

The marking of the equipment has to include the following details:

Control unit type FS850S.*** and type FS850S.***.BY1,*:

		alternatively	
⊕ Ex	II 2G Ex e mb [ib] [px] IIC T6 Gb	Ex eb mb [ib] [pxb] IIC T6	-20°C ≤ T _a ≤ +45°C
	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +60°C
	II 2D Ex tb [ib] [p] IIIC T 70 °C Db IP 65	Ex tb [ib] [pb] IIIC T 70 °C IP 65	-20°C ≤ T _a ≤ +60°C

Control unit type FS850S.***.HT und type FS850S.***.HT.BY1,*:

⊕ Ex	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +70°C
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Control unit type FS860S.*** und type FS860S.***.BY1,*:

⊕ Ex	II 2G Ex e mb [ib] [px] IIC T6 Gb	Ex eb mb [ib] [pxb] IIC T6	-20°C ≤ T _a ≤ +45°C
	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +60°C

Operator panel BT 851:

⊕ Ex	II 2G Ex ib IIC T6 Gb	Ex ib IIC T6
	II 2D Ex ib IIIC T 80 °C Db	Ex ib IIIC T 80 °C

15.2 Description

The circuits of the control units may now also be manufactured according to the test documents provided in the pertinent test and assessment report. Another reason for issuing this supplement was to evidence the compliance of the equipment with the updated standards listed above which in turn also requires a modification of the marking. The pressurised enclosure systems of types F 850 S and F 860 S were tested according to standard EN 50495: 2010, "Safety devices required for the safe functioning of equipment with respect to explosion risks". With regard to their functionality the systems are suitable for use in safety functions up to a safety integrity level of SIL 2. This assessment applies to the "high demand mode of operation". The software considered here is version 3.1.x as of 22.11.2005. The requirements of category 3 regarding one-fault safety are met; this corresponds with a hardware fault tolerance of HFT = 1.

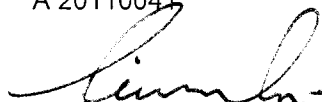
15.3 Parameters

All parameters remain unchanged.

- (16) Test and assessment report
BVS PP 06.2078 EG as of 10th May 2012
- (17) Special conditions for safe use
None

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 10.05.2012
BVS-Kr/Ar A 20110041



Certification body



Special services unit

Translation

(1) 4th 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 06 ATEX E 088**
- (4) Equipment: **Pressurised enclosure systems types F 850 S and F 860 S**
- (5) Manufacturer: **Gönzheimer Elektronik GmbH**
- (6) Address: **Dr.-Julius-Leber-Str. 2, 67433 Neustadt an der Weinstraße, Germany**
- (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 06.2078 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
- EN 60079-0:2012 **General requirements**
 - EN 60079-2:2007 **Pressurised Enclosure 'p'**
 - EN 60079-7:2007 **Increased Safety 'e'**
 - EN 60079-11:2012 **Intrinsic Safety 'i'**
 - EN 60079-18:2009 **Encapsulation 'm'**
 - EN 60079-31:2009 **Protection by Enclosure 't'**
 - EN 50495:2010 **Safety devices required for the safe functioning of equipment with respect to explosion risks**
- (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 2G see section 15.1
II 2D see section 15.1

DEKRA EXAM GmbH
Bochum, dated 2014-01-30

Signed: Simanski

Certification body

Signed: Dr. Wittler

Special services unit


- (13) Appendix to
- (14) **4th Supplement to the EC-Type Examination Certificate
BVS 06 ATEX E 088**
- (15) 15.1 Subject and type

Pressurised enclosure systems of the following types:
type F850S.*.*, type F850S.*.* BY1,* , type F860S.*.* type F860S.*.*.BY1,*


The marking of the equipment has to include the following details:

Control unit type FS850S.*.* and type FS850S.*.*.BY1,*:


alternatively

	II 2G Ex e mb [ib] [px] IIC T6 Gb	Ex eb mb [ib] [pxb] IIC T6	-20°C ≤ T _a ≤ +45°C
	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +60°C
	II 2D Ex tb [ib] [p] IIIC T 70°C Db IP 65	Ex tb [ib] [pb] IIIC T 70°C IP 65	-20°C ≤ T _a ≤ +60°C

Control unit type FS850S.*.*.HT und type FS850S.*.*.HT.BY1,*:

	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +70°C

Control unit type FS860S.*.* und type FS860S.*.*.BY1,*:

	II 2G Ex e mb [ib] [px] IIC T6 Gb	Ex eb mb [ib] [pxb] IIC T6	-20°C ≤ T _a ≤ +45°C
	II 2G Ex e mb [ib] [px] IIC T4 Gb	Ex eb mb [ib] [pxb] IIC T4	-20°C ≤ T _a ≤ +60°C

Operator panel BT 851:

	II 2G Ex ib IIC T6 Gb	Ex ib IIC T6
	II 2D Ex ib IIIC T 80°C Db	Ex ib IIIC T 80°C

15.2 Description

The apparatus of the Pressurised enclosure systems can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report. The circuits of the control units and of the operator panel has been changed slightly; also the apparatus have been assessed in acc. with the current standard versions EN 60079-* and EN 50495:2010.

Hardware and software have been modified.

The pressurised enclosure systems of types F 850 S and F 860 S were tested according to standard EN 50495: 2010, "Safety devices required for the safe functioning of equipment with respect to explosion risks". With regard to their functionality the systems are suitable for use in safety functions up to a safety integrity level of SIL 2. This assessment applies to the "high demand mode of operation". The requirements of category 3 regarding one-fault safety are met; this corresponds with a hardware fault tolerance of HFT = 1.

15.3 Parameters

Power supply (mains)
(Terminals 15 to 18) 230, 220, 120, 110, 24 V AC, or. 24 V DC
Safety-relevant maximum value U_m = 253 V

Valve fuse
(Terminals 25/26) accessory valve fuse of type SI850

Valve connections
(Terminals 21/22 and 23/24) Same voltage as power supply (mains)

Proportional valve connection
(Terminals 19/20) Same voltage as power supply (mains)

Contact circuits (Terminals 11/12 and 13/14)	ACV	DCV
	U = 250 V	U = 30 V
	I = 5 A	I = 5 A
	cosφ = 0.7	P = 150 W

Intrinsically safe connections

in type of protection Intrinsic Safety Ex ib IIC

The maximum values, the maximum permitted values and the outer reactances as well as the numbers of the terminals are shown in the table below:

Terminal	U_0	I_0	P_0	L_0	C_0
1, 9	8.61 V	51 mA	110 mW	10 mH	2 μ F
4	8.61 V	10 mA	22 mW	10 mH	2 μ F
3	8.61 V	20 mA	44 mW	10 mH	2 μ F
5, 6, 10	8.61 V	6 mA	13 mW	10 mH	2 μ F
7, 8	8.61 V	10 mA	22 mW	10 mH	2 μ F
2	Mass connection of circuits				

The intrinsically safe circuits (terminals 1 to 10) are safely galvanically separated from all other circuits up to the peak value of the nominal voltage of 375 V.

The permitted ambient temperature range is for temperature class T6 -20 °C to 45 °C and for temperature class T4: -20 °C to 60 °C.

For control unit type FS850S...HT (only T4) the permitted ambient temperature range is -20 °C to 70 °C.

To the control units the following constant flow-through volume applies in relation to the monitored minimum overpressure:

Minimum overpressure	Constant flow-through volume	
	FS850S... BY1,2	FS850S... BY1,5
80 Pa	0.013 l/s	0.020 l/s
100 Pa	0.014 l/s	0.022 l/s
200 Pa	0.020 l/s	0.031 l/s
400 Pa	0.028 l/s	0.044 l/s
600 Pa	0.034 l/s	0.054 l/s
800 Pa	0.040 l/s	0.062 l/s
1000 Pa	0.044 l/s	0.070 l/s

(16) Test and Assessment Report

BVS PP 06.2078 EG as of 2014-01-30

(17) Special conditions for safe use

None

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 2014-01-30
BVS-Schu/Ma A20130664

Certification body

Special services unit