



Translation

EC-TYPE EXAMINATION CERTIFICATE

- (1)
- (2) Equipment or Protective System intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) EC-Type Examination Certificate Number



TÜV 99 ATEX 1404 X

- (4) Equipment or Protective System: current-/voltage/limiter-modul 17-1923-1111/....
- (5) Manufacturer: Bartec Komponenten und Systeme GmbH
- (6) Address: Max-Eyth-Straße 16
D-97980 Bad Mergentheim
- (7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or 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 N° 99/PX0570.

- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997

EN 50 020:1994

- (10) If the sign "X" is placed after the certification 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 or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.
- (12) The marking of the equipment or protective system shall include the following:

II (2) G [EEx Ib] IIC

TÜV Hannover/Sachsen-Anhalt e.V.
TÜV CERT-Zertifizierungsatelle
Am TÜV 1
D-30519 Hannover

Hannover, 1998-05-12

Sts wal

Head of the
Certification Body





(13)

SCHEDULE

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 99 ATEX 1404 X**

(15) Description of equipment or protective system

The current-/voltage limiter-modul 17-1923-1111/... is used for the erection of Intrinsically safe circuits which physical quantities are the carrier of the information signals e.g. opto couplers. It is exclusively intended to deplet electrical signals of non-intrinsically safe circuits in intrinsically safe circuits and reversed.

The permissible ambient temperature range is: -25°C to 80°C.

Electrical data

Input circuits Rated voltage: $U_{rated} = 5\text{ V}$
(connections X1, X2, $U_m = 253\text{ V AC}$
X3 and X4)

Output circuits

Channel 1 in type of protection "Intrinsic Safety" EEx ib IIC resp. IIB
(connections X11 and X14)

Maximum values:

$$U_o = 6,2\text{ V}$$

$$I_o = 246\text{ mA}$$

$$P_o = 381\text{ mW}$$

Characteristic line: linear

The effective internal capacitance and inductance are negligibly small.

EEx ib	IIC	IIB
max. permissible external inductance	0,5 mH	2,6 mH
max. permissible external capacitance	34 μF	790 μF



Channel 2..... in type of protection "Intrinsic Safety" EEx ib IIC resp. IIB
(connections X12 and X14)

Maximum values:

$$U_o = 6,2 \text{ V}$$

$$I_o = 31,3 \text{ mA}$$

$$P_o = 48,5 \text{ mW}$$

Characteristic line: linear

effective internal capacitance: $C_i = 120 \text{ nF}$

The effective internal inductance is negligibly small.

EEx ib	IIC	IIB
max. permissible external inductance	23 mH	140 mH
max. permissible external capacitance	33,9 μF	790 μF

Channel 3..... in type of protection "Intrinsic Safety" EEx ib IIC resp. IIB
(connections X13 and X14)

Maximum values:

$$U_o = 6,2 \text{ V}$$

$$I_o = 30,0 \text{ mA}$$

$$P_o = 46,5 \text{ mW}$$

Characteristic line: linear

The effective internal capacitance and inductance are negligibly small.

EEx ib	IIC	IIB
max. permissible external inductance	25 mH	150 mH
max. permissible external capacitance	34 μF	790 μF

The output circuits are not galvanically separated.

(16) Test documents consisting of 18 sheets inclusive 5 drawings are listed in the test report.



(17) Special condition for safe use

1. The current-/voltage limiter-modul has to be operated in a casing of a type of protection of at least IP 20 according to IEC 60529.
2. The connections X4 and X14 have to be connected to the equipotential bonding system of the explosion hazardous area.

(18) Essential Health and Safety Requirements

no additional ones



Translation

1. SUPPLEMENT to

EC-TYPE EXAMINATION CERTIFICATE No. TÜV 99 ATEX 1404 X

of the company: BARTEC GmbH formerly: Bartec Componenten und Systeme GmbH
Max-Eyth-Straße 16
D-97980 Bad Mergentheim

In the future the current-/voltage-limiter module type 17-1923-1111/... will be extended by the type 17-1923-1122/... and may also be manufactured according to the test documents listed in the test report.

The amendments concern the internal design, the electrical data, the special conditions for safe use, the type designation and the marking.

The marking will be read as follows: Ex II (2) G D [EEx ib] IIC

Electrical data for type 17-1923-1122/....

Input circuits..... rated voltage: U_rated = 5 V
(connections X1, X2, U_m = 253 V AC
X3 and X4)

Output circuits

Channel 1..... in type of protection Intrinsic Safety EEx ib IIC resp. IIB
(connections X11 and X14)

Maximum values:
U_o = 6,2 V
I_o = 246 mA
P_o = 381 mW
characteristic line: linear

The effective internal inductance and capacitance are negligibly small.

Table with 3 columns: EEx ib, IIC, IIB. Rows: max. permissible outer inductance L_o, max. permissible outer capacitance C_o.



1. Supplement to EC-Type Examination Certificate No. TÜV 99 ATEX 1404 X

Channel 2..... in type of protection Intrinsic Safety EEx ib IIC resp. IIB
(connections X12 and X14)

Maximum values:

$$U_o = 6,2 \text{ V}$$

$$I_o = 285 \text{ mA}$$

$$P_o = 441 \text{ mW}$$

Characteristic line: linear

effective internal capacitance: $C_i = 120 \text{ nF}$

The effective internal inductance is negligibly small.

EEx ib	IIC	IIB
max. permissible outer inductance L_o	0,4 mH	2,0 mH
max. permissible outer capacitance C_o	33,9 μF	789,9 μF

Channel 3..... in type of protection Intrinsic Safety EEx ib IIC resp. IIB
(connections X13 and X14)

Maximum values:

$$U_o = 6,2 \text{ V}$$

$$I_o = 19 \text{ mA}$$

$$P_o = 29 \text{ mW}$$

characteristic line: linear

The effective internal inductance and capacitance are negligibly small.

EEx ib	IIC	IIB
max. permissible outer inductance L_o	85 mH	340 mH
max. permissible outer capacitance C_o	34 μF	790 μF

The output circuits are galvanically connected with each other.

In case of the parallel connection of channel 2 and 3 the following maximum values apply:

$$U_o = 6,2 \text{ V}$$

$$I_o = 304 \text{ mA}$$

$$P_o = 470 \text{ mW}$$

characteristic line: linear

effective internal capacitance: $C_i = 120 \text{ nF}$

The effective internal inductance is negligibly small.

EEx ib	IIC	IIB
max. permissible outer inductance L_o	0,31 mH	1,5 mH
max. permissible outer capacitance C_o	33,9 μF	789,9 μF

All further data apply unchanged for this supplement.

1. Supplement to EC-Type Examination Certificate No. TÜV 99 ATEX 1404 X

The electrical data for the type 17-1923-1111/.... have to be taken from the EC-Type Examination certificate.

The current-/voltage-limiter module type 17-1923-11../.... according to EC-Type Examination Certificate TÜV 99 ATEX 1404 X incl. of this 1st supplement also meets the requirements of

*EN 50 014:1997+A1+A2 and
EN 50 020:2002.*

(16) Test documents are listed in the Test Report N° 04 YEX 551254.

(17) Special conditions for safe use

1. The current-/voltage-limiter module has to be installed in such a way that for the intended operation site a suitable degree of protection according to EN 60529 is achieved. In case of installation in dry, clean and well controlled environments IP 20 is sufficient.
2. The connections X4 and X14 have to be connected to the equipotential bonding system of the explosion hazardous area.

(18) Essential Health and Safety Requirements

no additional ones

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TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2004-07-27



Head of the
Certification Body

Translation

2. SUPPLEMENT

to Certificate No. TÜV 99 ATEX 1404 X

Equipment: current-/voltage limiter-modul 17-1923-1111/....

Manufacturer: **BARTEC GmbH**

Address: Max-Eyth-Straße 16
97980 Bad Mergentheim
Germany

Order number: 8000554980

Date of issue: 2009-02-06

Amendments:

The current-/voltage limiter-modul 17-1923-1111/.... is extended by the type 17-1923-1133/.... and the optical transceiver type 17-2114-0002/**** and type 17-2114-0003/****.

Additionally the type 17-1923-1111/.... and type 17-1923-1122/.... are assessed in accordance to the actual state of the standards.

Technical data:

electrical data for type 17-1923-1133/....

input circuits rated voltage: $U_{rated} = 5\text{ V}$
(connections X1, X2, $U_m = 253\text{ V AC}$
X3 and X4)

output circuits

channel 1 in type of protection „Intrinsic Safety“ Ex ib IIC resp. IIB
(connections X11 and X14) maximum values:
 $U_o = 6.2\text{ V}$
 $I_o = 246\text{ mA}$
 $P_o = 381\text{ mW}$
Characteristic line: linear

The effective internal capacitance and inductance are negligibly small.

Ex ib	IIC	IIB
max. permissible external inductance L_o	0.5 mH	2.6 mH
max. permissible external capacitance C_o	34 μF	790 μF

The above defined ratings in the table are max. values of the external reactance are only valid for the non-coincidental occurrence of those.

2. Supplement to Certificate No. TÜV 99 ATEX 1404 X

channel 2 in type of protection „Intrinsic Safety“ Ex ib IIC resp. IIB
 (connections X12 and X14) maximum values:
 $U_o = 6.2 \text{ V}$
 $I_o = 285 \text{ mA}$
 $P_o = 442 \text{ mW}$
 Characteristic line: linear

The effective internal capacitance and inductance are negligibly small.

Ex ib	IIC	IIB
max. permissible external inductance L_o	0.4 mH	2.0 mH
max. permissible external capacitance C_o	34 μ F	790 μ F

The above defined ratings in the table are max. values of the external reactance are only valid for the non-coincidental occurrence of those.

channel 3 in type of protection „Intrinsic Safety“ Ex ib IIC resp. IIB
 (connections X13 and X14) maximum values:
 $U_o = 6.2 \text{ V}$
 $I_o = 30 \text{ mA}$
 $P_o = 46.5 \text{ mW}$
 Characteristic line: linear



The effective internal capacitance and inductance are negligibly small.

Ex ib	IIC	IIB
max. permissible external inductance L_o	54 mH	100 mH
max. permissible external capacitance C_o	34 μ F	790 μ F

The above defined ratings in the table are max. values of the external reactance are only valid for the non-coincidental occurrence of those.



Marking:

current-/voltage limiter-modul
 type 17-1923-1111/****, type 17-1923-1122/**** and type 17-1923-1133/****



-  II (2) G [Ex ib] IIC/IIB and
-  II (2) D [Ex ibD]

2. Supplement to Certificate No. TÜV 99 ATEX 1404 X

optical transmitter unit
type 17-2114-0002/****

-  II 2 G Ex ib op is IIC/IIB T4 and
-  II 2 D Ex ibD op is 21 T120

optical receiver unit
type 17-2114-0003/****

-  II 2 G Ex ib IIC/IIB T4 and
-  II 2 D Ex ibD 21 T120

The permissible ambient temperature range	- 25 °C to + 80 °C
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The electrical data and all other data apply unchanged for this supplement.

The equipment incl. of this supplement meets the requirements of these standards:

EN 60079-0:2006	EN 60079-11:2007	EN 60079-28:2007
EN 61241-0:2006	EN 61241-11:2006	

(16) The test documents are listed in the test report No. 09 203 554980.

(17) Special conditions for safe use

1. The current-/voltage limiter-modul type 17-1923-1111/****, type 17-1923-1122/**** and type 17-1923-1133/**** shall be operated in an enclosure with the degree of protection of at least IP20 (for clean, dry and supervised rooms).
2. The optical transmitter unit type 17-2114-0002/**** and the optical receiver unit type 17-2114-0003/**** shall be operated in an enclosure with the degree of protection of at least IP20 (for clean, dry and supervised rooms) resp. in the wall of the enclosure that fulfils the requirements of the directive 94/9/EC and the applicable standards EN 60079-0 and EN 61241-0. That means for non-metallic enclosures the avoidance of electrostatic charging by appliance of either clause 7.3 of the EN 60079-0:2006 (for category II 2 G) or clause 6.1.5 of the EN 61241-0:2006 (for category II 2 D) and for enclosures containing light metal the material composition shall comply with either clause 8.1.2 of the EN 60079-0:2006 (for category II 2 G) or EN 61241-0:2006 (for category II 2 D).
3. The connections X4 and X14 have to be connected to the equipotential bonding system of the explosion hazardous area. For the whole zone of erection potential equalisation shall be ensured.

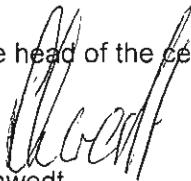
(18) Essential Health and Safety Requirements

no additional ones

2. Supplement to Certificate No. TÜV 99 ATEX 1404 X

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, accredited by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the certification body

A handwritten signature in black ink, appearing to read "Schwedt".

Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

3. E R G Ä N Z U N G

zur Bescheinigungsnummer: TÜV 99 ATEX 1404 X

Gerät: Strom-/Spannungsbegrenzer-Modul 17-1923-1111/...

Hersteller: BARTEC GmbH

Anschrift: Max-Eyth-Straße 16
97980 Bad Mergentheim
Deutschland

Auftragsnummer: 8000407180

Ausstellungsdatum: 01.11.2012

Änderungen:

Der Aufbau des Strom-/Spannungsbegrenzer-Moduls 17-1923-1111/... und der optischen Sende- und Empfangseinheiten Typ 17-2114-0002/**** und Typ 17-2114-0003/**** wurden geändert. Die Änderungen betreffen den inneren Aufbau. In Zukunft dürfen die Geräte nach den in den Prüfungsunterlagen gelisteten Dokumenten gefertigt und vertrieben werden.

Zudem wurden die Geräte Typ bezüglich der Normengenerationsänderung bewertet.

Technische Daten:

Electrische Daten für Strom-/Spannungsbegrenzer-Modul Typ 17-1923-1111/.... und Typ 17-1923-1122/.... und Typ 17-1923-1133/....:

Eingangstromkreise Bemessungsspannung: $U_{rated} = 5 \text{ V}$
(Anschlüsse X1, X2, $U_m = 30 \text{ V}$
X3 und X4)

Ausgangstromkreise
Kanal 1 in Zündschutzart Eigensicherheit [Ex ib] IIC bzw. IIB/IIIC
(Anschlüsse X11 und X14) **Höchstwerte:**

		17-1923-1133/....		17-1923-1133/....		17-1923-1133/....	
U_o	=	6,2	V	6,2	V	6,2	V
I_o	=	246	mA	246	mA	246	mA
P_o	=	381	mW	381	mW	381	mW

Kennlinie: linear

Die wirksame innere Induktivität und Kapazität ist vernachlässigbar klein.

	Ex ib	IIC	IIB
höchstzul. äußere Induktivität L_o		0,5 mH	2,6 mH
höchstzul. äußere Kapazität C_o		34 μF	790 μF

Die vorgenannten Höchstwerte der äußeren Reaktanzen gelten nur, soweit das gleichzeitige Auftreten nicht betrachtet werden muss.

3. Ergänzung zur Bescheinigungsnummer TÜV 99 ATEX 1404 X

Kanal 2 in Zündschutzart Eigensicherheit [Ex ib] IIC bzw. IIB/IIIC
(Anschlüsse X12 und X14) Höchstwerte:

		17-1923-1111/....		17-1923-1122/....		17-1923-1133/....	
U_o	=	6,2	V	6,2	V	6,2	V
I_o	=	31,3	mA	285	mA	285	mA
P_o	=	48,5	mW	442	mW	442	mW

Kennlinie: linear

Die wirksame innere Induktivität und Kapazität ist vernachlässigbar klein.

17-1923-1111/....	IIC	IIB
höchstzul. äußere Induktivität L_o	23 mH	140 mH
höchstzul. äußere Kapazität C_o	33,9 μ F	789,9 μ F

17-1923-1122/.... and 17-1923-1133/....	IIC	IIB
höchstzul. äußere Induktivität L_o	0,4 mH	2 mH
höchstzul. äußere Kapazität C_o	33,9 μ F	789,9 μ F

Die vorgenannten Höchstwerte der äußeren Reaktanzen gelten nur, soweit das gleichzeitige Auftreten nicht betrachtet werden muss.

Kanal 3 in Zündschutzart Eigensicherheit [Ex ib] IIC bzw. IIB/IIIC
(Anschlüsse X13 und X14) Höchstwerte:

		17-1923-1111/....		17-1923-1122/....		17-1923-1133/....	
U_o	=	6,2	V	6,2	V	6,2	V
I_o	=	30	mA	19	mA	30	mA
P_o	=	46,5	mW	29	mW	46,5	mW

Kennlinie: linear

Die wirksame innere Induktivität und Kapazität ist vernachlässigbar klein.

17-1923-1111/.... und 17-1923-1133/....	IIC	IIB
höchstzul. äußere Induktivität L_o	25 mH	150 mH
höchstzul. äußere Kapazität C_o	33,9 μ F	789,9 μ F

17-1923-1122/....	IIC	IIB
höchstzul. äußere Induktivität L_o	85 mH	340 mH
höchstzul. äußere Kapazität C_o	33,9 μ F	789,9 μ F

Die vorgenannten Höchstwerte der äußeren Reaktanzen gelten nur, soweit das gleichzeitige Auftreten nicht betrachtet werden muss.

Electrische Daten für optischen Transceiver Typ 17-2114-0002/** und Typ 17-2114-0003/******

Optischer Sender in Zündschutzart Eigensicherheit Ex Ib IIC bzw. IIB/IIIC
(Anschluss weiße und blaue Leitung) Höchstwerte:

17-2114-0002/....			
U_i	=	6,2	V
I_i	=	246	mA
P_i	=	381	mW

Optischer Sender Versorgung in Zündschutzart Eigensicherheit Ex Ib IIC bzw. IIB/IIIC
(Anschluss rote und blaue Leitung) Höchstwerte:



17-2114-0003/....			
U_i	=	6,2	V
I_i	=	285	mA
P_i	=	442	mW

Optischer Empfänger Signal in Zündschutzart Eigensicherheit Ex Ib IIC bzw. IIB/IIIC
(Anschluss weiße und blaue Leitung) Höchstwerte:



17-2114-0003/....			
U_i	=	6,2	V
I_i	=	30	mA
P_i	=	46,5	mW

Kennzeichnung des Prüfgegenstandes:



Strom-/Spannungsbegrenzer-Modul
Typ 17-1923-1111/****, Typ 17-1923-1122/**** und Typ 17-1923-1133/****

-  II (2) G [Ex Ib Gb] IIC/IIB und
-  II (2) D [Ex Ib Db] IIIC/IIIB

Optische Sendeeinheit
Typ 17-2114-0002/****

-  II 2 G Ex Ib op is IIC/IIB T4 Gb und
-  II 2 D Ex Ib IIIC TX °C Db

Optische Empfangseinheit
Typ 17-2114-0003/****

-  II 2 G Ex Ib IIC/IIB T4 Gb und
-  II 2 D Ex Ib IIIC TX °C Db

Für "TX°C" siehe die "Besondere Bedingung"

3. Ergänzung zur Bescheinigungsnummer TÜV 99 ATEX 1404 X

Zulässiger Bereich der Umgebungstemperatur	- 25 °C bis + 80 °C
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Die elektrischen Daten sowie alle weiteren Angaben gelten unverändert für diese Ergänzung.

Das Gerät incl. dieser Ergänzung erfüllt die Anforderungen der folgenden Normen:

EN 60079-0:2012

EN 60079-11:2012

EN 60079-28:2007

(16) Die Prüfungsunterlagen sind im Prüfbericht Nr. 12 203 100405 aufgelistet.

(17) Besondere Bedingungen

1. Für den Betrieb ist das Strom-Spannungsbegrenzer-Modul Typ 17-1923-1111/****, Typ 17-1923-1122/**** und Typ 17-1923-1133/**** in einem Gehäuse mit der Schutzart von mindestens IP20 (für trockene, saubere und gut überwachten Umgebung) zu errichten.
2. Für den Betrieb ist die optische Empfangseinheit Typ 17-2114-0003/**** und die optische Sendeeinheit Typ 17-2114-0002/**** in einem Gehäuse von mindestens IP20 für EPL Gb Geräte (für die Errichtung in trockenen, sauberen und gut überwachten Umgebungen) und IP6X für EPL Db Geräte zu errichten.
3. Die Anschlüsse X4 und X14 sind an das Potentialausgleichssystem des explosionsgefährdeten Bereiches anzuschließen. Für den gesamten Bereich der Errichtung des Gerätes muss Potentialausgleich herrschen. Der Anschluss muss in nichtstöranfälliger Art erfolgen.

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, benannt durch die Zentralstelle der Länder für Sicherheitstechnik (ZLS), Ident. Nr. 0044, Rechtsnachfolger der TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

Der Leiter der Zertifizierungsstelle



Schwedt

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590