



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.:	IECEx TUN 16.0024X	issue No.:0	Certificate history:
Status:	Current		
Date of Issue:	2016-07-15	Page 1 of 3	
Applicant:	Böhm Feinmechanik und Elektrotechnik Betriebsges. m.b.H. Am Schlörbach 14 38723 Seesen-Rhüden Germany		
Equipment: Optional accessory:	Ex-Heating control unit FRBL-3 type 1077 and FRBL-4 type 1078		
Type of Protection:	Increased safety "e", intrinsic safety "i", encapsulation "m", equipment dust ignition protection by enclosure "t"		
Marking:	Ex e ib mb [ib Gb] IIC T4 Gb and Ex tb IIIC T105°C Db		
Approved for issue on behalf of the IECEx Certification Body:	Karl-Heinz Schwedt		
Position:	Head of IECEx Certification Body		
Signature: (for printed version)			
Date:	<u>2016-07-15</u>		

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

TÜV NORD CERT GmbH
Hanover Office
Am TÜV 1
30519 Hannover
Germany





IECEx Certificate of Conformity

Certificate No.: IECEx TUN 16.0024X

Date of Issue: 2016-07-15

Issue No.: 0

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Manufacturer: **Böhm Feinmechanik und Elektrotechnik Betriebsges. m.b.H.**
Am Schlörbach 14
38723 Seesen-Rhüden
Germany

Additional Manufacturing location
(s):

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

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-18 : 2014 Edition: 4.0	Explosive atmospheres - Part 18: Equipment protection by encapsulation "m"
IEC 60079-31 : 2013 Edition: 2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

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

TEST & ASSESSMENT REPORTS:

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

Test Report:
[DE/TUN/ExTR16.0030/00](#)

Quality Assessment Report:
[DE/TUN/QAR13.0003/03](#)



IECEx Certificate of Conformity

Certificate No.: IECEx TUN 16.0024X

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

In conjunction with PT100 resistance thermometers, the Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 are intended for use for control and limitation operating equipment in explosion hazardous areas.

The Pt100 circuits are executed in type of protection intrinsic safety; the connected Pt100 sensors have to be assessed for use in explosion hazardous areas (see also electrical data for measuring circuits).

The Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 may be operated in explosion hazardous areas, where apparatus of category 2 (explosive gas or dust atmospheres) are required.

The safe function as monitoring device for thermal processes is not object of the Certificate.

Ambient temperature range: -55 °C ... + 55 °C

For further details see Annexe.

CONDITIONS OF CERTIFICATION: YES as shown below:

See annexe

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Attachment to IECEx TUN 16.0024X Issue 0

In conjunction with PT100 resistance thermometers, the Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 are intended for use for control and limitation of operating equipment in explosion hazardous areas.

The Pt100 circuits are executed in type of protection intrinsic safety; the connected Pt100 sensors have to be assessed for use in explosion hazardous areas (see also electrical data for measuring circuits).

The Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 may be operated in explosion hazardous areas, where apparatus of category 2 (explosive gas or dust atmospheres) are required.

The safe function as monitoring device for thermal processes is not object of the Certificate.

Ambient temperature range: -55 °C ... + 55 °C

Electrical data

Supply voltage $U_n = 100 \dots 240 \text{ V a. c.}, \pm 10\%, 50 \dots 60 \text{ Hz}$
 (Connections 3, 4) $U_m = 264 \text{ V a. c.}$
 The load input has to be fused with max. 32 A.

External device fuse GS5 only for connection of a certified device fuse type GS5,
 (Connections 1, 2) series 1080, 160 mA

Load output for connection of heating devices
 (Connections 5, 6) load current max. 30 A, resistive load

Relay output collective alarm 1 break contact; permissible values:
 (Connections 7, 8) 250 V a. c., 5A, 100 VA resp. 24 V d. c., 5A, 100 W

Modbus $U_m = 6 \text{ V}$, only FRBL-4 type1078
 (Connections 9, 10, 11)

Measuring circuits in type of protection Intrinsic Safety Ex ib IIC/IIB
 (Connections

12, 13, 14 [controller] and
 15, 16, 17 [limiter])

Maximum value per circuit:

$U_o = 5 \text{ V}$

$I_o = 15 \text{ mA}$

$P_o = 23 \text{ mW}$

$R = 427 \text{ } \Omega$

Characteristic line: trapezoidal

Only for the connection of Pt100-resistance thermometers

Ex ib	IIC			IIB		
maximum external inductance	100 mH	10 mH	1 mH	100 mH	10 mH	1 mH
maximum external capacitance	1.3 μF	2.3 μF	3.6 μF	8.3 μF	12 μF	20 μF

The maximum values of the table are also allowed to be used up to the permissible limits as concentrated capacitances and as concentrated inductances.

The values for IIC and IIB are also permissible for explosive dust atmospheres.

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Attachment to IECEx TUN 16.0024X Issue 0

The intrinsically safe measuring circuits are safely galvanically separated from the non intrinsically safe circuits up to the peak value of the voltage of 375 V.

The intrinsically safe measuring circuits are safely galvanically separated from earth potential.

“Conditions of Use”

1. The permissible operating position is vertical.
2. The circuit supply voltage has to be fused externally with max. 32 A.
3. At 30 A load current and 55 °C ambient temperature, the temperature at the branching point of the cables for the supply voltage and the load output is 91 °C. Suitable cables have to be used for these circuits.
4. The Pt100 sensors connected to the intrinsically safe circuits can be assessed as simple electrical apparatus according to section 5.7 of IEC 60079-11.
5. All connection cables have to be installed fixed.

(1) **EU-Baumusterprüfbescheinigung**

- (2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, **Richtlinie 2014/34/EU**



- (3) **Bescheinigungsnummer:** TÜV 15 ATEX 167581 X **Ausgabe:** 00
(4) für das Produkt: Ex-Beheizungssteuerung
FRBL-3 Typ 1077 und FRBL-4 Typ 1078
(5) des Herstellers: Böhm Feinmechanik und Elektrotechnik Betriebsges. m.b.H.

- (6) Anschrift: Schlörbach 14
38723 Seesen-Rhüden

Auftragsnummer: 8000451910

Ausstellungsdatum: 18.07.2016

- (7) Die Bauart dieses Produktes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage und den darin aufgeführten Unterlagen zu dieser EU-Baumusterprüfbescheinigung festgelegt.
- (8) Die TÜV NORD CERT GmbH bescheinigt als notifizierte Stelle Nr. 0044 nach Artikel 17 der Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 die Erfüllung der wesentlichen Gesundheits- und Sicherheitsanforderungen für die Konzeption und den Bau dieses Produktes zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.
Die Ergebnisse der Prüfung sind in dem vertraulichen ATEX Prüfungsbericht Nr. 16 203 167581 festgelegt.
- 9) Die wesentlichen Gesundheits- und Sicherheitsanforderungen werden erfüllt durch Übereinstimmung mit:
- | | | |
|--------------------------|------------------|------------------|
| EN 60079-0:2012+A11:2013 | EN 60079-7:2007 | EN 60079-11:2012 |
| EN 60079-18:2015 | EN 60079-31:2014 | |
- ausgenommen die unter Abschnitt 18 der Anlage gelisteten Anforderungen.
- (10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf die Besonderen Bedingungen für die Verwendung des Produktes in der Anlage zu dieser Bescheinigung hingewiesen.
- (11) Diese EU-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Produktes. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Bereitstellen dieses Produktes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.
- (12) Die Kennzeichnung des Produktes muss die folgenden Angaben enthalten:

 II 2 G Ex e ib mb [ib Gb] IIC T4 Gb und II 2 D Ex tb IIIC T105°C Db

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notifiziert 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 notifizierten Stelle

Schwedt

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Tel. +49 511 998-61455, Fax +49 511 998-61590

(13) A N L A G E

(14) EU-Baumusterprüfbescheinigung Nr. TÜV 15 ATEX 167581 X Ausgabe 00

(15) Beschreibung des Produktes

Die Ex-Beheizungssteuerungen FRBL-3 Typ 1077 und FRBL-4 Typ 1078 dienen bestimmungsgemäß in Verbindung mit Pt100-Widerstandsthermometern zur Steuerung und Überwachung von Betriebsmitteln in explosionsgefährdeten Bereichen.

Die Pt100-Stromkreise sind in der Zündschutzart Eigensicherheit ausgeführt; die angeschlossenen Pt100-Fühler müssen für den Einsatz im explosionsgefährdeten Bereich beurteilt werden (siehe auch elektrische Daten der Messstromkreise).

Die Ex-Beheizungssteuerungen FRBL-3 Typ 1077 und FRBL-4 Typ 1078 dürfen in explosionsgefährdeten Bereichen errichtet werden, in denen Betriebsmittel der Kategorie 2 (explosionsfähige Gas- oder Staubatmosphären) erforderlich sind.

Die sichere Funktion als Überwachungseinrichtung für thermische Prozesse ist nicht Gegenstand der Bescheinigung.

Umgebungstemperaturbereich: -55 °C ... + 55 °C

Elektrische Daten

Versorgungsspannung (Anschlüsse 3, 4)	U _n = 100 ... 240 V AC, ±10%, 50 ... 60 Hz U _m = 264 V AC Der Lasteingang ist mit max. 32 A abzusichern.
Externe Gerätesicherung GS5 (Anschlüsse 1, 2)	nur zum Anschluss einer bescheinigten Gerätesicherung Typ GS5, series 1080, 160 mA
Lastausgang (Anschlüsse 5, 6)	zum Anschluss von Beheizungseinrichtungen Laststrom max. 30 A, ohmsche Last
Relais-Ausgang Sammelalarm (Anschlüsse 7, 8)	1 Öffner; zulässige Werte: 250 V AC., 5A, 100 VA bzw.. 24 V DC, 5A, 100 W
Modbus (Anschlüsse 9, 10, 11)	U _m = 6 V, nur FRBL-4 Typ 1078

Messstromkreise in Zündschutzart Eigensicherheit Ex ib IIC/IIB
(Anschlüsse

12, 13, 14 [Regler] und
15, 16, 17 [Begrenzer])

Höchstwerte je Stromkreis:

U_o = 5 V

I_o = 15 mA

P_o = 23 mW

R = 427 Ω

Kennlinie: trapezförmig

nur zum Anschluss von Pt100-Widerstandsthermometern

Ex ib	IIC			IIB		
höchstzul. äußere Induktivität	100 mH	10 mH	1 mH	100 mH	10 mH	1 mH
höchstzul. äußere Kapazität	1,3 µF	2,3 µF	3,6 µF	8,3 µF	12 µF	20 µF

Anlage zur EU-Baumusterprüfbescheinigung Nr. TÜV TÜV 16 ATEX 167581 X Ausgabe 00

Die Höchstwerte der Tabelle dürfen auch als konzentrierte Kapazitäten und konzentrierte Induktivitäten ausgenutzt werden.

Die Werte für IIC und IIB sind auch für explosionsfähige Staubatmosphären zulässig.

Die eigensicheren Messstromkreise sind bis zu einem Scheitelwert der Spannung von 375 V von den nichteigensicheren Stromkreisen getrennt.

Die eigensicheren Messstromkreise sind sicher vom Erdpotential getrennt.

(16) Zeichnungen und Dokumente sind im ATEX Prüfungsbericht Nr. 16 203 167581 aufgelistet.

(17) Besondere Bedingungen für die Verwendung

1. Die zulässige Betriebslage ist vertikal.
2. Der Stromkreis „Lasteingang“ ist extern mit max. 32 A abzusichern.
3. Bei 30 A Laststrom und 55 °C Umgebungstemperatur beträgt die Temperatur an der Aderverzweigung der Leitung für die Versorgungsspannung und den Lastausgang 91 °C. Es müssen geeignete Leitungen für diese Stromkreise verwendet werden.
4. Die an den eigensicheren Stromkreisen angeschlossenen Pt 100 Fühler können als einfache elektrische Betriebsmittel gemäß Abschnitt 5.7 der EN 60079-11 beurteilt werden.
5. Alle Anschlussleitungen sind fest zu installieren.

(18) Wesentliche Gesundheits- und Sicherheitsanforderungen

keine zusätzlichen

- Ende der Bescheinigung -

Translation

(1) EU-Type Examination Certificate

- (2) Equipment and protective systems intended for use in potentially explosive atmospheres, **Directive 2014/34/EU**



- (3) **Certificate Number** TÜV 15 ATEX 167581 X **issue:** 00
- (4) for the product: Ex-Heating control unit
FRBL-3 Typ 1077 und FRBL-4 Typ 1078
- (5) of the manufacturer: Böhme Feinmechanik und Elektrotechnik Betriebsges. m.b.H.
- (6) Address: Schlörbach 14
38723 Seesen-Rhüden
Germany

Order number: 8000451910

Date of issue: 2016-07-18

- (7) The design of this product and any acceptable variation thereto are specified in the schedule to this EU-Type Examination Certificate and the documents therein referred to.
- (8) The TÜV NORD CERT GmbH, Notified Body No. 0044, in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 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 ATEX Assessment Report No. 16 203 179411.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012+A11:2013 EN 60079-7:2007 EN 60079-11:2012
EN 60079-18:2015 EN 60079-31:2014
except in respect of those requirements listed at item 18 of the schedule.
- (10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions for Use specified in the schedule to this certificate.
- (11) 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 equipment. These are not covered by this certificate.
- (12) The marking of the product shall include the following:

 II 2 G Ex e ib mb [ib Gb] IIC T4 Gb und II 2 D Ex tb IIIC T105°C Db

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified 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 notified body

Schwedt

Hanover office, Am TÜV 1, 30519 Hannover, Tel. +49 511 998-61455, Fax +49 511 998-61590

This certificate may only be reproduced without any change, schedule included.
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

(13) SCHEDULE

(14) EU-Type Examination Certificate No. TÜV 16 ATEX 167581 X Ausgabe 00

(15) Description of product

In conjunction with PT100 resistance thermometers, the Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 are intended for use for control and limitation of operating equipment in explosion hazardous areas.

The Pt100 circuits are executed in type of protection intrinsic safety; the connected Pt100 sensors have to be assessed for use in explosion hazardous areas (see also electrical data for measuring circuits).

The Ex – heating controls FRBL-3 type 1077 and FRBL-4 type 1078 may be operated in explosion hazardous areas, where apparatus of category 2 (explosive gas or dust atmospheres) are required.

The safe function as monitoring device for thermal processes is not object of the Certificate.

Ambient temperature range: -55 °C ... + 55 °C

Electrical data

Supply voltage (Connections 3, 4)	$U_n = 100 \dots 240 \text{ V a. c., } \pm 10\%, 50 \dots 60 \text{ Hz}$ $U_m = 264 \text{ V a. c.}$ The load input has to be fused with max. 32 A.
External device fuse GS5 (Connections 1, 2)	only for connection of a certified device fuse type GS5, series 1080, 160 mA
Load output (Connections 5, 6)	for connection of heating devices load current max. 30 A, resistive load
Relay output collective alarm (Connections 7, 8)	1 break contact; permissible values: 250 V a. c., 5A, 100 VA resp. 24 V d. c., 5A, 100 W
Modbus (Connections 9, 10, 11)	$U_m = 6 \text{ V}$, only FRBL-4 type 1078

Measuring circuits in type of protection Intrinsic Safety Ex ib IIC/IIB
(Connections 12, 13, 14 [controller] and 15, 16, 17 [limiter])

Maximum value per circuit:

$$\begin{aligned}
 U_o &= 5 \text{ V} \\
 I_o &= 15 \text{ mA} \\
 P_o &= 23 \text{ mW} \\
 R &= 427 \text{ } \Omega
 \end{aligned}$$

Characteristic line: trapezoidal

Only for the connection of Pt100-resistance thermometers

Ex ib	IIC			IIB		
maximum external inductance	100 mH	10 mH	1 mH	100 mH	10 mH	1 mH
maximum external capacitance	1.3 μF	2.3 μF	3.6 μF	8.3 μF	12 μF	20 μF

Schedule to EU-Type Examination Certificate No. TÜV 16 ATEX 167581 X Ausgabe 00

The maximum values of the table are also allowed to be used up to the permissible limits as concentrated capacitances and as concentrated inductances.

The values for IIC and IIB are also permissible for explosive dust atmospheres.

The intrinsically safe measuring circuits are safely galvanically separated from the non intrinsically safe circuits up to the peak value of the voltage of 375 V.

The intrinsically safe measuring circuits are safely galvanically separated from earth potential.

(16) Drawings and documents are listed in the ATEX Assessment Report No. 16 203 167581

(17) Specific Conditions for Use

1. The permissible operating position is vertical.
2. The circuit supply voltage has to be fused externally with max. 32 A.
3. At 30 A load current and 55 °C ambient temperature, the temperature at the branching point of the cables for the supply voltage and the load output is 91 °C. Suitable cables have to be used for these circuits.
4. The Pt100 sensors connected to the intrinsically safe circuits can be assessed as simple electrical apparatus according to section 5.7 of IEC 60079-11.
5. All connection cables have to be installed fixed.

(18) Essential Health and Safety Requirements
no additional ones

- End of Certificate -



EU-Konformitätserklärung
EU-Declaration of conformity

Der Hersteller / Inverkehrbringer:
The manufacturer:

Böhm Feinmechanik und Elektrotechnik Betriebsges. m.b.H.
Am Schlörbach 14
D 38723 Seesen - Rhüden

erklärt hiermit, dass das nachstehende Produkt:
declares hereby, that the following product:

Elektronische Beheizungssteuerung	FRBL-3 Baureihe 1077
	FRBL-4 Baureihe 1078
<i>Electronic Heating Controller</i>	<i>FRBL-3 Type 1077</i>
	<i>FRBL-4 Type 1078</i>

den geltenden Bestimmungen folgender EU-Richtlinien entspricht:
is according to the following EU-regulations:

Richtlinie 2014/34/EU	[ATEX]
Richtlinie 2014/30/EU	[EMC]

Angewandte harmonisierte Normen:
Applied harmonized standards:

IEC 60079-0: 2012+A11:2013	IEC 60079-7: 2007
IEC 60079-11: 2012	IEC 60079-18: 2015
IEC 60079-31: 2014	
EN 61000-6-2: 2005	EN 61000-6-4: 2007

Allgemeine Normen:
General standards:

IEC 60127-3/III
NAMUR NE 21

Benannte Stelle:
Certification body:

TUV NORD CERT GmbH Geschäftsstelle Hannover, Ident. Nr. 0044

Bescheinigungsnummer:
Certificate Number:

TÜV 15 ATEX 167581 X IECEx TUN 16.0024 X

Seesen - Rhüden, 28.08.2016

Alfred

Manfred Böhm
Geschäftsführer
managing director