

Installation and Operating Instructions



Thermosafe Temperature control

Description

The Thermosafe Temperature Controller is supplied as a collection of parts for assembly by the end user. Installation and operating instructions are included within this booklet for each component. It is the installers / users responsibility to ensure all parts are installed and used correctly.

The Thermosafe Temperature Controller is for controlling the drum wall temperature when heated by a Thermosafe

Parts List

1 x Ex Heating Controller FRBL-1 type 1081
2 x CEAG M12 Exi Nylon Blue Cable gland GHG960195R0121 (for use with magnetic temperature sensors)
2 x CMP 20s E1FX M20 brass cable glands (Thermosafe cable and power supply cable)
1 x M20 blanking plug
1 x M25 blanking plug
2 x PT100 magnetic temperature sensor with 3m lead

Installation

The Thermosafe Temperature Controller is supplied as a collection of parts for assembly by the end user. Installation / operating instructions and certificates are included within this booklet for each component; the installer should ensure these are the latest edition before installing the equipment. It is the installers / users responsibility to ensure all parts are installed and used correctly.

The 2 x magnetic temperature sensors should be placed on the drum wall, between the Thermosafe and drum, approximately half way up the drum wall

The Ex Heating Controller temperature limiter has been set by the manufacturer at 190°C unless another temperature was requested before purchase.

Refer to the component instructions and certificates for safety information, particularly the special conditions of use.

Ensure a 25A circuit breaker is used with the Ex Heating Controller as specified

All cables should be suitably clamped

Ensure the cable gland supplied for power cable is suitable for the type of power cable used.

Blanking plugs are provided for the cable entries not used.

Ex Heating Controller



Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Before installation and use read this manual!

General safety advice

This device must be installed and used by qualified personal. Safety regulations and this wiring and operating instructions must be strictly observed.

The regulations of DIN VDE 0100 must be observed.

It must be ensured that personal or other persons are not endangered.

For the intended use it must be assured, that the intended range of the unit is not exceeded (e.g. voltage, load current, ambient temperature).

The producer is not liable for damages by external forces or other damages through external factors!

Use only units from original packings and free of damage.

Manipulation of the unit is prohibited and excludes warranty. The unit may be repaired solely by the producer.

Description

The FRBL-1 type 1081 is to be used with resistance temperature sensors (PT100 DIN) for the temperature control and limitation of devices in ATEX areas.

The device also comprises the power section in form of a full-wave control.

ATEX according to RL94/9/EG, EN 60079-0, EN 60079-7, EN 60079-11, EN 60079-18 EN 60079-31 and EMI-shielding NAMUR NE21



Böhm Feinmechanik & Elektrotechnik
Am Schlörbach 14, D-38723 Seesen

Heating Controller FRBL-1 Type 1081

Year of manufacture :	2014
Serial-No. :	<Sernr>
U nom :	230V, -15%/+10%, 50...60Hz
I nom :	25A
ext. circuit breaker :	25A Si-Automat. note operation manual
Breaking capacity :	6kA, cosφ> 0,7
Measuring range :	0...+450°C
Protection :	IP64



0044



II 2 G Ex e ib [ib Gb] mb IIC T4 Gb
II 2 D Ex tb IIIC IP 6X T90 °C Db

measuring circuit intrinsically safe: U₀= 6.3V, I₀= 22mA, P₀= 35mW
for Ex ib IIC : max. C₀= 1.5μF, max. L₀= 10mH
for Ex ib IIB : max. C₀= 8.2μF, max. L₀= 10mH

Not open in a location with explosive dust atmosphere!

General Mounting Instructions

- Device according to protection class I
- EN 60079-14 has to be observed
- DIN VDE 0100 has to be observed, device must be fixed with all 4 fixing points to the support frame
- Any kind of device manipulation is impermissible
- Connect the PE terminal to the enclosure cover
- The terminal cover also serves as protection against contact and must be mounted during operation
- The cable glands connections must match the cables/lines
- Cables and lines must be firmly routed

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Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Characteristics

- Application area II 2 G Ex e ib [ib Gb] mb IIC T4 Gb and II D Ex tb IIIC IP 6X T90 °C Db
- Measuring range of temperature controller and temperature limiter 0...450°C
- Intrinsically safe and galvanic isolation connection of the Pt100 DIN EN 60751 resistance thermometer in 3- or 2-wire circuit
- Setting of the switching point by means of a screwdriver
- Measured value processing via a micro controller
- Greener-LED-indication of the main contactors switching position
- Measured value display via 7-segment-LED-display for controller and limiter
- Signalling of sensor break and sensor short-circuit
- Reset of the limiter at the device or externally
- After power failure no reset required
- Power supply 230V~ 50/60 Hz (optional 254V)
- No disadvantage effect to the power supply because of full wave control with SSR (solid-state relay)
- Solid aluminium standard enclosure IP64 for mounting on base plate

Function

FRBL-1 type 1081 is an electrical heating controller which is typically installed in ATEX areas. Temperature sensors work in an intrinsically safe electric circuit. Measured values are processed in separate micro controllers for temperature controller and temperature limiter.

1. Temperature Limiter

The temperature limiter is set by the manufacturer and can not be changed by the user.

As soon as the sensor temperature exceeds the set limit value, the load circuit is opened and interlocked (red LED on). The interlocking can be reset by an internal reset button.

In case of a line break, short circuit or if no sensor (Pt100) has been connected, the load circuit is opened and interlocked.

If the supply voltage fails, the power supply of the circuit to be limited is also interrupted. After the supply voltage has been restored, the device returns to the condition it was in before the supply voltage failure.

2. Temperature Controller

Upon operation of the pushbuttons **T1** or **T2**, the corresponding set point is displayed.

The potentiometers **T1 Maintain temperature** and **T2 Alarmtemperature** allow for a separate setting of switching points.

heating switching point: set point T1; Maintain temperature

temperature alarm: set point T2; Alarmtemperature Terminals 3, 4, 5 (changeover)

In case of a line break or a short-circuit of the temperature sensor, the main circuit is opened and the fault is displayed.

3. Power control

The power control unit consists of a main relay and full wave control with zero crossing switching.

The output power may be adjusted in 10% steps from 10% to 100%

Adaptation to different trace heating cables and length is possible.

External protection of the Heating circuit by a 25A circuit breaker.

The cable connection must be stationary.

The device is equipped with an internal self resetting temperature switch, which triggers at 90°C.

The operator himself can replace the control circuit fuse GS5 type 1080.

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Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Measuring Circuit Monitoring

With the FRBL-1, the temperature sensor systems of the controller and the limiter are both monitored in the same way:

<i>Short-circuit of the sensor line or $T < -100^{\circ}\text{C}$</i>	<i>Internal signal - LED display flashes with “---” value External signal - Opens load circuit (limiter with interlocking)</i>
<i>Line break of the sensor line or $T > 532^{\circ}\text{C}$</i>	<i>Internal signal - LED display flashes with the “UUU” value External signal - Opens load circuit (limiter with interlocking)</i>
<i>Line break of the sensor line with 3-wire connection</i>	<i>Internal signal - LED display flashes with the “UU” value External signal - Opens load circuit (limiter with interlocking)</i>
<i>Sensor line $> 22\ \Omega$</i>	<i>Internal signal - LED display flashes with measured value External signal - Opens load circuit (limiter with interlocking)</i>

Tests

- Explosion protection: - EC-Type Examination Certificate TÜV 03 ATEX 2078 ben. Stelle 0044
 - Ex-proof general EN 60079-0:2009
 - Ex-proof intrinsic safety EN 60079-11:2007
 - Ex-proof increased safety t EN 60079-7:2003
 - Ex-proof encapsulation EN 60079-18:2004
 - Ex-proof equipment dust EN 60079-31:2009
- EMI shielding: - EMI-tested
- Namur NE 21 Prüfkriterium A
- Additional test: each device checked after thermal treatment according to BÖHM confidential instruction BV 010403a

Technical Data

Supply voltage:	195,5 – 253V~ 50-60Hz
External protection:	25A circuit-breaker, type A, B, C (Siemens), or Z, B, C (ABB)
Power consumption:	$\leq 11\text{VA}$ (without load)
Mounting position:	Wall-mounting
Intrinsically safe measuring circuit:	[Ex ib] IIC $U_0= 6,3\text{ V}$, $I_0= 22\text{ mA}$, max. $C_0= 1,5\ \mu\text{F}$, max. $L_0= 10\text{ mH}$ [Ex ib] IIB $U_0= 6,3\text{ V}$, $I_0= 22\text{ mA}$, max. $C_0= 8,2\ \mu\text{F}$, max. $L_0= 10\text{ mH}$
Temperature sensor:	Resistance thermometer in industrial version Pt100 DIN
Relay output alarm:	1 NC contact 5A, 250 V~, 100VA or 5A, 24 V DC, 100W
Limiter switching point shift related to the set point:	tripping value 2°C below the defined set point
Setting range limiter/controller T1:	0...450°C
controller low alarm T2:	-30...+430°C
indicating range:	actual value: -99...460°C
Switching point accuracy:	$< 1\text{K}$
Controller hysteresis:	2K
Ambient temperature:	-20...+40°C

Technical data are subject to change.

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Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Enclosure:	aluminium, mounting on base plate			
Degree of protection:	EN 60529 IP64			
Terminals: (Conductor cross-section)	Infeed	0.5...6 mm ²	Reset/rel. Output	0.2...4 mm ²
	Load output	0.5...6 mm ²	Sensors	0.2...4 mm ²
Dimensions:	260 x 160 x 135mm			
Weight:	app. 6,0 kg			

Electrical Connection / Device Connections

Terminals F1, F2	fuse GS5 (use only if original fuse is blown)
Terminals L1, N, PE:	power supply, bonding (or on the outside of PE)
Terminals 1, 2:	load circuit
Terminals 3, 4, 5:	output group fault
Terminals 8, 9, 10:	resistance thermometer Pt 100 controller, 3-wire connection, intrinsically-safe
Terminals 11, 12, 13:	resistance thermometer Pt 100 limiter, 3-wire-connection, intrinsically-safe

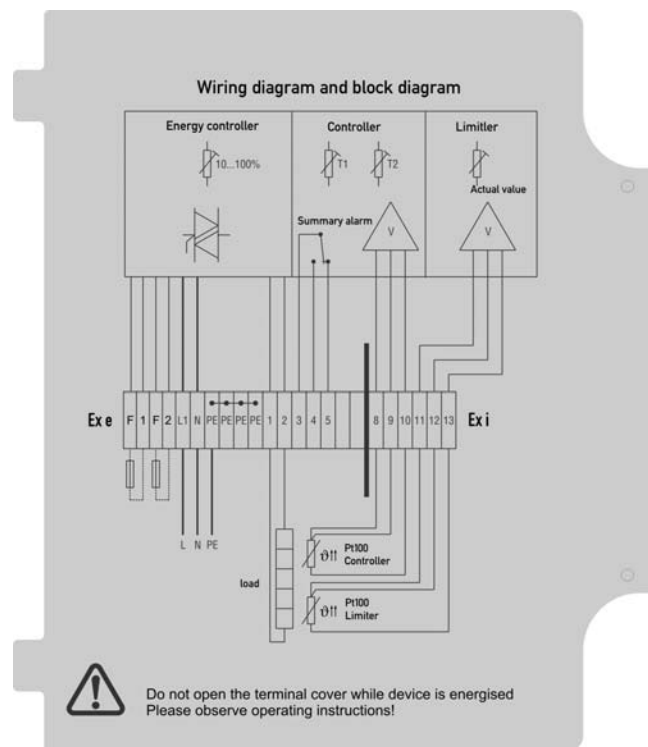


Fig. 1: Terminal cover

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Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Start up of temperature controller/limiter

Connections:

1. Connect temperature sensors (Pt100) at terminals 8 to 13.
2. If needed connect output group fault and external reset.
3. Connect supply voltage and load circuit.

Temperature controller:

Set switchpoint Maintain temperature:

Press button **T1** and set switchpoint with screwdriver at potentiometer **T1 Maintain temperature**, if temperature < switchpoint green LED turns on (heating is working).

Set switchpoint Alarmtemperature:

Press button **T2** and set switchpoint with screwdriver at potentiometer **T2 Alarmtemperature**, switchpoint has to be < temperature, otherwise output group fault will be active.

When using the Pt100 two-wire circuit, a line compensation is required.
A respective manual is available from Böhm.

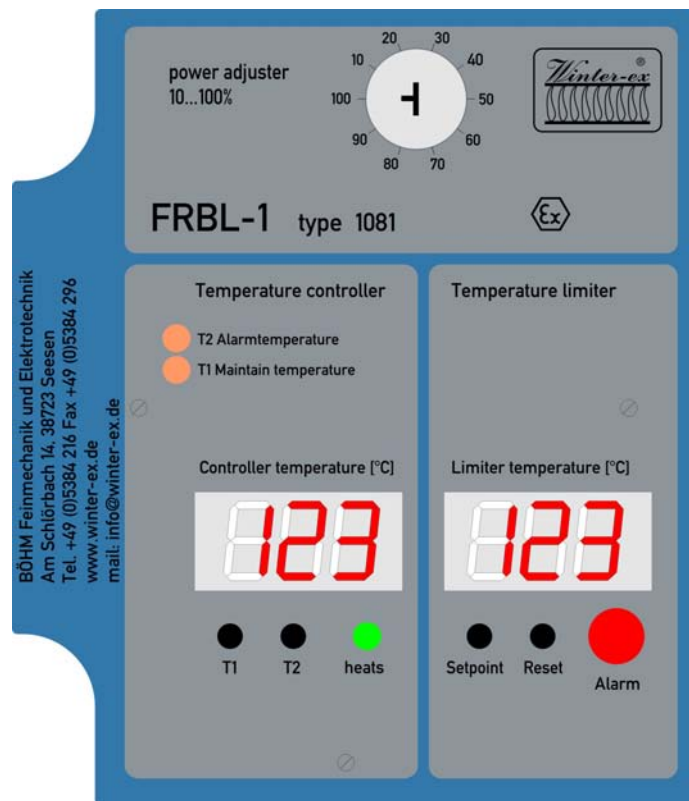


Fig.2: Front-Panel



Ex Heating Controller FRBL-1 type 1081

Installation- and operating instructions

Fig. 3: Cable gland

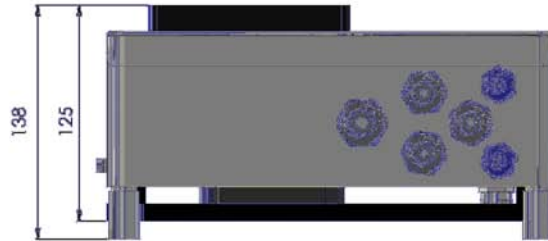


Fig. 4: Dimensions

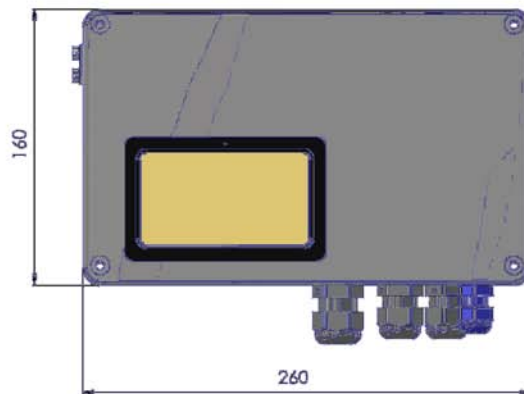
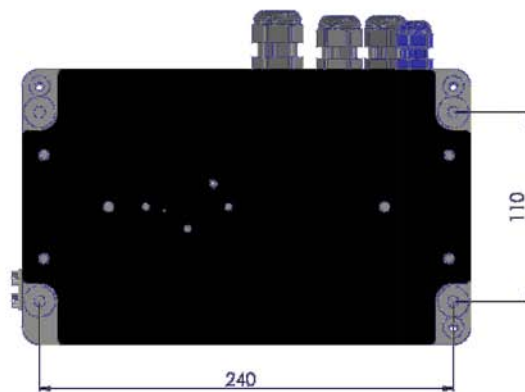


Fig. 5: Fixing





Translation

(1) **EC-TYPE EXAMINATION CERTIFICATE**

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



(3) EC-Type Examination Certificate Number

TÜV 03 ATEX 2078

(4) Equipment: Ex heating control type FRBL-1, series 1057/1058

(5) Manufacturer: Böhm Feinmechanik und Elektrotechnik Betriebs – GmbH

(6) Address: Am Schlörbach 14
D-38723 Seesen-Rhüden

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH & Co. KG, TÜV CERT-Certification Body, notified body number N° 0032 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), 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 the confidential report N° 03 YEX 550258.

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

EN 50014:1997+A1+A2 EN 50019:2000 EN 50 020:2002 EN 50 028:1987

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

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the 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 or protective system must include the following:

II 2 G EEx m e ib [ib] IIC T4

TÜV NORD CERT GmbH & Co. KG
TÜV CERT-Certification Body
Am TÜV 1
D-30519 Hannover
Tel.: 0511 986-1470
Fax: 0511 986-2555

Hanover, 2005-03-07



Head of the Certification Body

TÜV CERT/A4 02.04 5.000 16

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

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(13)

SCHEDULE

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 03 ATEX 2078**

(15) Description of equipment

The Ex heating control type FRBL-1, series 1057/1058 in conjunction with a PTC resistance thermomter is used for the control and limitation of the temperature of equipment in hazardous explosive areas which require apparatus of category 2.

Electrical Data

Supply voltage Un = 230 V, -15%/+10%, 50 ... 60 Hz
(Connection L1, N, PE)

Load circuit for the connection of the heating facility
(Connection 1 and 2)

External unlocking connected with the supply circuit; only to connect a key
(Connection 6 and 7) switch (250 V AC, 0,1 A)

Output temperature alarm..... 1 change over contact; permissible values:
(connection 3, 4 and 5) 250 V AC, 5A, 100 VA or 24 V DC, 5A, 100 W

Measurement circuitin type of protection Intrinsic Safety EEx ib IIC/IIB
(connection
8, 9, 10 [control unit] and
11, 12, 13 [limiter])

Maximum value per circuit:

$U_o = 6,3 \text{ V}$

$I_o = 22 \text{ mA}$

$P_o = 35 \text{ mW}$

characteristic line: linear

only for the connection of Pt100-resistance thermometer.

	EEx ib	IIC	IIB
maximum outer inductance		50 mH	200 mH
maximum outer capacitance		31 μ F	720 μ F

The intrinsically safe measurement circuits are safely galvanically separated from all other non-intrinsically safety circuits up to a surely electrically isolated up to a maximum value of 375 V from the not-intrinsically safe electric circuits. The intrinsically safe measure circuits are surely separate from the earth potential.

special conditions for safe use:

The resistance thermometer PT 100, that is connected on the intrinsic safety circuit is an simple electrical system and has to be rate by the EN 50020 article 5.4.



(16) Test documents are listed in the test report No.: 03YEX550258.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones



2. SUPPLEMENT
to
Statement of Conformity No. TÜV 03 ATEX 2078

Of the company: Böhm Feinmechanik und Elektrotechnik Betriebs - GmbH
Am Schlörbach 14
D-38723 Seesen-Rhüden

The explosion-protected heating controls, type FRBL-1, series 1057/1058, may in future also be manufactured and operated in accordance with the documentation listed below.

The modifications concern the heating current circuit.

The electronic load relay has been omitted; the heating current circuit is wired to the main fuse. The type designation for this modified version is FRBL-1, series 1059/1060.

The electrical data and all other specifications remain unchanged for this 2. Supplement.

The individual testing steps are documented in the confidential test report 03YEX550655b.

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Hannover, 2005-03-07


Der Leiter

Translation
3. SUPPLEMENT
to
EC-Type Examination Certificate No. TÜV 03 ATEX 2078

Equipment: Ex heating control type FRBL-1, series 1058 b
Manufacturer: Böhm Feinmechanik und Elektrotechnik Betriebs GmbH
Address: Am Schlörbach 14
D-38723 Seesen-Rhüden

In the future, the Ex-heating control type FRBL-1, series 1057/1058 may also be manufactured and operated according to the test documents listed below.
The changes refer the electrical data of the supply voltage.
The type designation for this changed version reads FRBL-1 series 1058b.

Electrical data

Supply voltage $U_n = 254 \text{ V, } +4\%/-10\%, 50 \dots 60 \text{ Hz}$
(Connections L1, N, PE)

All other details remain unchanged.

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

EN 50 014:1997 A1 + A2 EN 50 019:2000 EN 50 020:2002 EN 50 028:1987

(16) The test documents are listed in the test report no. 06 YEX 552779.

(17) Special conditions for safe use

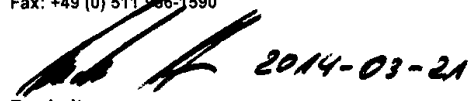
none

(18) Essential Health and Safety Requirements

no additional ones

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Hannover, 2006-03-16



Der Leiter
Origin signatory: Karl-Heinz Schwedt

Translation

4. SUPPLEMENT

to Certificate No.	TÜV 03 ATEX 2078
Equipment:	Ex heating control type FRBL-2, series 1061 and 1062
Manufacturer:	Böhm Feinmechanik und Elektrotechnik Betriebs GmbH
Address:	Am Schlörbach 14 D-38723 Seesen-Rhüden
Order number:	8000553073
Date of issue:	2009-07-02
German original certificate issued on	2006-06-07

In the future, the Ex heating control type FRBL-1 may also be manufactured according to the documents listed in the test report.

The type designation of the Ex heating control reads

type FRBL-2 series 1061* for the execution with 230V nominal voltage,
type FRBL-2 series 1062* for the execution with 115V nominal voltage and
type FRBL-2 series 1063* for the execution with 254V nominal voltage.

The following changes were realised:

- The Ex heating control is extended by a device for indication of the rms-value of the heating current by means of additional evaluation electronics and a belonging measurement instrument. (Marking with „Stromanzeige Typ FRBL2“). The internal construction of the Ex heating control is changed accordingly.
- In the future, the permissible ambient temperature range is -40°C ... +40°C.
- At a reduced load current of 16A, the Ex heating control is allowed to be operated also at an ambient temperature of ≤ 50°C.
- With connected supply voltage, the Ex heating control is allowed to be operated at -40°C; a decrease of the ambient temperature to -50°C with the apparatus in operation is permissible.
- The installation of certified components according to directive 94/9/EG by the manufacturer is permissible if the safety relevant hints in the regarding certificates are observed.

Electrical data

Type FRBL-2 series 1061*

Supply voltage $U_n = 230 \text{ V, } -15\%/+10\%, 50 \dots 60 \text{ Hz}$
(Connections L1, N, PE)

Type FRBL-2 series 1062*

Supply voltage $U_n = 115 \text{ V, } -15\%/+10\%, 50 \dots 60 \text{ Hz}$
(Connections L1, N, PE)

Type FRBL-2 series 1063*

Supply voltage $U_n = 254 \text{ V, } +4\%/-10\%, 50 \dots 60 \text{ Hz}$
(Connections L1, N, PE)

4. Supplement to Certificate No. TÜV 03 ATEX 2078

All other details remain unchanged for this supplement.

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

EN 50014:1997+A1+A2 EN 50019:2000 EN 50 020:2002 EN 50 028:1987

(16) The test documents are listed in the test report No. 06 YEX 553073.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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



Schwedt

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Translation
5. SUPPLEMENT

to Certificate No. TÜV 03 ATEX 2078
Equipment: Ex heating control
type FRBL-4, series 1081, 1082, 1087
type FRBL-5, series 1064, 1065
Manufacturer: Böhm Feinmechanik und Elektrotechnik Betriebs GmbH
Address: Am Schlörbach 14
38723 Seesen-Rhüden
Germany
Order number: 8000554521
Date of issue: 2009-07-02
German original certificate issued on 2008-12-11

In the future, the EC-Type Examination Certificate TÜV 03 ATEX 2078 is valid for the Ex heating controls according to the following table:

Type	Supply voltage	Permissible temperature range	Remark
FRBL-1 series 1081	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	--
FRBL-1 series 1082	254 V, -10%/+4% 50 ... 60 Hz	-20°C ... + 40°C	--
FRBL-1 series 1087	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	without electr. load relay (SSR)
FRBL-2 series 1064	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50 °C) *	with current indicator type FRBL2
FRBL-2 series 1065	115 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50°C) *	with current indicator type FRBL2

* At a reduced load current of 16A, the Ex heating control may also be operated at an ambient temperature of ≤ 50°C.

An operation of the Ex heating control according to the table mentioned above at an ambient temperature of -50°C is not permissible any more.

The installation of certified components according to directive 94/9/EG and according to the test documents of the manufacturer is permissible.

Electrical data

Supply voltage see table
(Connections L1, N, PE)
Internal fuses only for connection to fuses according to
(Connections F1 and F2) EC-Type Examination Certificate TÜV 07 ATEX 553973 U
by the manufacturer
Load output for connection to heating devices
(Connections 1 and 2)
External release connected with the supply voltage;
(Connections 6 and 7) only for connection to a pushbutton (250 V a. c.; 0.1 A)

5. Supplement to Certificate No. TÜV 03 ATEX 2078

Output temperature alarm 1 change-over contact; permissible values:
(Connections 3, 4, 5) 250V a. c., 5A, 100VA resp. 24V d. c., 5A, 100W

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

8, 9, 10 [closed loop control] and
11, 12, 13 [limiter])

Maximum values per circuit:

U_o = 6.3 V

I_o = 22 mA

P_o = 35 mW

Characteristic line: linear

Only for connection to Pt100 resistance thermometers

	Ex ib	IIC	IIB
max. permissible external inductance		10 mH	10 mH
max. permissible external capacitance		1.5 μ F	8.2 μ F

Hints for erection:

The maximum values of the tables are also allowed to be used up to the permissible values by concentrated capacitances and inductances.

The Pt 100 sensors connected to the intrinsically safe circuits are simple electrical apparatus and have to be assessed according to section 5.7 of EN 60079-11.

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

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

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2006

EN 60079-7:2003

EN 60079-11:2007

EN 60079-18:2004

(16) The test documents are listed in the test report No. 08 204 554521.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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

i.V. Schwedt
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page 2/2

Translation

6. SUPPLEMENT

to Certificate No. TÜV 03 ATEX 2078
Equipment: Ex heating control type FRBL-x, series 10xx
Manufacturer: Böhm Feinmechanik und Elektrotechnik Betriebs GmbH
Address: Am Schlörbach 14
 38723 Seesen-Rhüden
 Germany
Order number: 8000556050
Date of issue: 2010-09-14

In the future, the Ex heating control type FRBL-x, series 10xx may be manufactured according to the documents listed in the test report.

The changes refer to the suitability of the Ex heating control for operation in potentially explosive dust atmospheres with conductive dust as well as the mechanical construction (execution of the vision panel) and the marking.

In the future, the marking reads as follows:

II 2 G Ex e ib [ib Gb] mb IIC T4 Gb
 and
 II 2 D Ex tb IIIC IP 6X T90 °C Db

Table of technical data:

No.	Type	Supply voltage	Permissible temperature range	Remark
1	FRBL-1 series 1081	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	--
2	FRBL-1 series 1082	254 V, -10%/+4% 50 ... 60 Hz	-20°C ... + 40°C	--
3	FRBL-1 series 1087	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	without electr. load relay (SSR)
4	FRBL-2 series 1064	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50 °C) *	with current indicator type FRBL2
5	FRBL-2 series 1065	115 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50°C) *	with current indicator type FRBL2
6	All mentioned types; marking with II 2 D	according to no. 1 ... 6	-20 °C ... +40 °C	for operation in explosive dust atmospheres

* At a reduced load current of 16A, the Ex heating control may also be operated at an ambient temperature of ≤ 50°C.

The installation of certified components according to directive 94/9/EG and according to the test documents of the manufacturer is permissible.

Electrical data

- Supply voltage see table of technical data
(Connections L1, N, PE)
- Internal fuses only for connection to fuses according to
(Connections F1 and F2) EC-Type Examination Certificate TÜV 07 ATEX 553973 U
by the manufacturer
- Load output for connection to heating devices
(Connections 1 and 2)
- External release connected with the supply voltage;
(Connections 6 and 7) only for connection to a pushbutton (250 V a. c.; 0.1 A)
- Output temperature alarm 1 change-over contact; permissible values:
(Connections 3, 4, 5) 250V a. c., 5A, 100VA resp. 24V d. c., 5A, 100W
- Measuring circuits in type of protection Intrinsic Safety Ex ib IIC/IIB
(Connections
8, 9, 10 [closed loop control] and
11, 12, 13 [limiter])

Maximum values per circuit:
 $U_o = 6.3 \text{ V}$
 $I_o = 22 \text{ mA}$
 $P_o = 35 \text{ mW}$
 Characteristic line: linear

Only for connection to Pt100 resistance thermometers

Ex ib	IIC	IIB
max. permissible external inductance	10 mH	10 mH
max. permissible external capacitance	1.5 μF	8.2 μF

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

Hints for erection and operation:

- At dangers by explosive dust atmospheres, the housing must not be opened; in particular, this is valid for connecting the current indicator.
- The circuit „Load input“ has to be fused externally with max. 25 A.
- The Ex control for electrical resistance trace heating has to be erected in such a way, that only a low risk of mechanical danger exists for the cable entries.
- All connection cables have to be installed fixed.
- The Pt 100 sensors connected to the intrinsically safe circuits are simple electrical apparatus and have to be assessed according to section 5.7 of EN 60079-11.
- The maximum values of the tables are also allowed to be used up to the permissible values by concentrated capacitances and inductances.
- The intrinsically safe measuring circuits are safely galvanically separated from the non-intrinsically safe circuits up to a peak crest value of the voltage of 375 V.

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

These hints are content of the manufacturer`s manual.

6. Supplement to Certificate No. TÜV 03 ATEX 2078

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009

EN 60079-7:2003

EN 60079-11:2007

EN 60079-18:2004

EN 60079-31:2009

(16) The test documents are listed in the test report no. 10 203 556050.

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones

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



Schwedt

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

Translation
7. SUPPLEMENT

to Certificate No. TÜV 03 ATEX 2078

Equipment: Ex heating controls

FRBL-1 series 2081
FRBL-1 series 2082
FRB-1 series 2087
FRBL-2 series 2064
FRBL-2 series 2065

Manufacturer: Böhmer Feinmechanik und Elektrotechnik Betriebsges. m.b.H.

Address: Am Schlörbach 14
38723 Seesen-Rhüden, Germany

Order number: 8000402752

Date of issue: 2012-08-30

In the future, the Ex heating control type FRBL-x, series 10xx may be manufactured according to the documents listed in the test report.

The changes refer to the installation of separately certified plug-in connectors in metal execution.

The type designation of the devices with installed plug-in connectors reads as follows:

Ex heating controls

FRBL-1 series 2081
FRBL-1 series 2082
FRB-1 series 2087
FRBL-2 series 2064
FRBL-2 series 2065

Table of technical data:

No.	Type	Supply voltage	Permissible temperature range	Remark
1	FRBL-1 series 2081	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	--
2	FRB-1 series 2082	254 V, -10%/+4% 50 ... 60 Hz	-20°C ... + 40°C	--
3	FRBL-1 series 2087	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C	without electr. load relay (SSR)
4	FRBL-2 series 2064	230 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50 °C) *	with current indicator type FRBL2
5	FRBL-2 series 2065	115 V, -15%/+10%, 50 ... 60 Hz	-20°C ... + 40°C or -40°C ... +40°C (+50°C) *	with current indicator type FRBL2
6	All mentioned types; marking with II 2 D	according to no. 1 ... 5	-20 °C ... +40 °C	for operation in explosive dust atmospheres

* At a reduced load current of 16A, the Ex heating control may also be operated at an ambient temperature of ≤ 50°C.

The reduction down to 16 A is necessary at use of the plug-in connectors.

Electrical data

Supply voltage see table of technical data;
 (Connections L1, N, PE max. 16 A a. c. (for load disconnection max. 10 A
 or optionally at use of a
 panel plug-in connector 3:
 Pins 1 [L], 2 [N] and 7 [PE])

Flange socket 1

Load output for connection to heating devices
 (Pins 1, 2 and 7 [PE])

Output temperature alarm 1 change-over contact; permissible values:
 (Pins 3, 4, 5) 250V a. c., 5A, 100VA resp. 24V d. c., 5A, 100W

Flange socket 2

Measuring circuits in type of protection Intrinsic Safety Ex ib IIC/IIB
 (Pins 1, 2, 3 [closed loop control] Maximum values per circuit:
 and 4, 5, 6 [limiter])

$U_o = 6.3 \text{ V}$
 $I_o = 22 \text{ mA}$
 $P_o = 35 \text{ mW}$

Characteristic line: linear

Only for connection to Pt100 resistance thermometers

	Ex ib	IIC	IIB
max. permissible external inductance		10 mH	10 mH
max. permissible external capacitance		1.5 μF	8.2 μF

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

Hints for erection and operation:

1. At dangers by explosive dust atmospheres, the housing must not be opened; in particular, this is valid for connecting the current indicator.
2. The circuit „Load input“ has to be fused externally with max. 25 A.
 Apparatus with separately certified plug-in connectors in metal execution: Externally fusing with max. 16 A
3. The Ex control for electrical resistance trace heating has to be erected in such a way, that only a low risk of mechanical danger exists for the cable entries.
4. All connection cables have to be installed fixed.
5. The Pt 100 sensors connected to the intrinsically safe circuits are simple electrical apparatus and have to be assessed according to section 5.7 of EN 60079-11.
6. The maximum values of the tables are also allowed to be used up to the permissible values by concentrated capacitances and inductances.

7. Supplement to Certificate No. TÜV 03 ATEX 2078

7. The intrinsically safe measuring circuits are safely galvanically separated from the non-intrinsically safe circuits up to a peak crest value of the voltage of 375 V.
The intrinsically safe measuring circuits are safely separated from the earth potential.

8. Apparatus with installed separately certified plug-in connectors in metal execution: For load disconnection, a reduced current in the plug-in connectors of 10 A is permissible.

These hints are content of the manufacturer's manual.

The equipment according to this supplement meets the requirements of these standards:

EN 60079-0:2009

EN 60079-7:2007

EN 60079-11:2007

EN 60079-18:2004

EN 60079-31:2009

All other details remain unchanged.

(16) The test documents are listed in the test report no. 12 203 093475.

(17) Special conditions for safe use

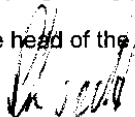
none

(18) Essential Health and Safety Requirements

no additional ones

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 Hanover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

BOHM

EG-Konformitätserklärung EC-Declaration of conformity

Der Hersteller / Inverkehrbringer
The manufacturer

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

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

Elektronische Beheizungssteuerung FRBL-1 Baureihe 1081/FRB-1 Baureihe 1087
Electronic Heating Controller FRBL-1 Type 1081/FRB-1 Type 1087

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

EG-Richtlinie 94 / 9 / EG
EMV - Richtlinie 2004 / 108 / EG

Angewendete Normen und technische Spezifikationen:
Applied standards and technical specifications:

IEC 60127-3/III	/	EN 60 079-0: 2009
	/	EN 60 079-7: 2007
	/	EN 60 079-11: 2007
	/	EN 60 079-18: 2004
	/	EN 60 079-31: 2009
	/	EN 61 000-6-2: 2001
	/	EN 61 000-6-4: 2001

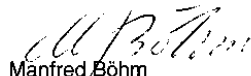
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Benannte Stelle / Certifying body:

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

Bescheinigungsnummer / Certificate Number: **TÜV 03 ATEX 2078**

Seesen-Rhüden, den 17.12.2012


Manfred Böhm
Geschäftsführer / managing director

Böhm Feinmechanik und Elektrotechnik Betriebsges. m.b.H., Am Schlörbach 14, D-38723 Seesen - Rhüden
Tel.: 05384-216, Fax: 05384-296, mail: info@winter-cx.de

Exi Cable Glands

Capri EXACAP Ex-e & Ex-i / CEAG GHG Ex-e & Ex-i

Technical Specification



Suitable for the following cable types

➡ Non-armoured cable

Certifications and Compliances

ATEX Certificate No: PTB 99 ATEX 3101X (M12-M16 only)

No: PTB 99 ATEX 3128X (M20-M63 only)

II 2 G Ex e II / II 2 D Ex tD A21 IP66

IECEX Certificate No: IECEX PTB 05.0004X

Product Specification

Operating Temperature:

ATEX / IECEx Certification: -20°C to +70°C

Nylon material

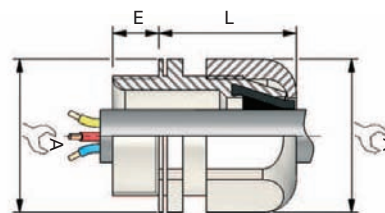
Large cable connection area

Low torque required for tightening

Integrated sealing lip on thread

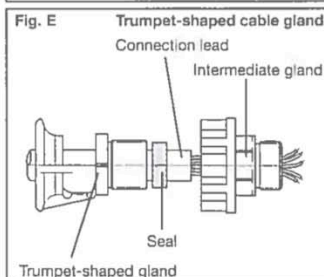
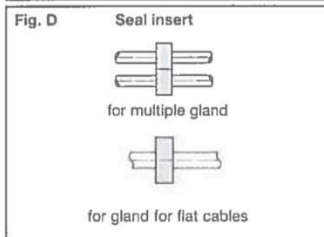
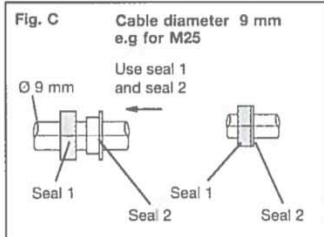
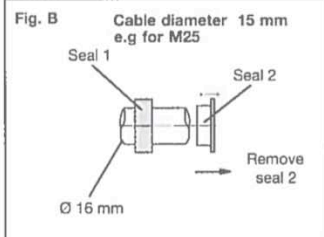
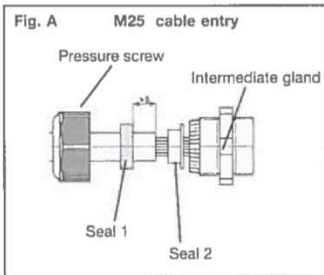
Ingress Protection (IP):

IP66



SELECTION TABLE	DIMENSIONS				CAP GLAND SIZE	CAP NUMBER EX-e (black)	CAP NUMBER EX-i (blue)	CEAG Number ISO Ex-e (black)	CEAG Number ISO Ex-i (blue)
	THREAD SIZE ISO	CABLE DIAMETER MIN - MAX	A	E THREAD LENGTH					
12	4.0 - 7.0	15	8	19	4	CAP451217	CAP451216	GHG 960 1955 R 0001	GHG 960 1955 R0101
16	5.5 - 10.0	20	8	23	6	CAP451617	CAP451616	GHG 960 1955 R 0002	GHG 960 1955 R0102
20	5.5 - 13.0	24	12	25	7	CAP452017	CAP452016	GHG 960 1955 R 0023	GHG 960 1955 R0123
25	8.0 - 17.5	29	13	29	9	CAP452517	CAP452516	GHG 960 1955 R 0024	GHG 960 1955 R0124
32	12.0 - 21.0	36	15	35	10	CAP453217	CAP453216	GHG 960 1955 R 0025	GHG 960 1955 R0125
40	17.0 - 28.0	46	15	39	11	CAP454017	CAP454016	GHG 960 1955 R 0026	GHG 960 1955 R0126
50	22.0 - 35.0	55	16	44	12	CAP455017	CAP455016	GHG 960 1955 R 0027	GHG 960 1955 R0127
63	27.0 - 48.0	68	16	47	13	CAP456317	CAP456316	GHG 960 1955 R 0028	GHG 960 1955 R0128

All dimensions in mm



1 Technical data

1.1 Technical details for:	
Cable entries (KLE)	M12 to M63
Multiple glands	M25 to M32
Enlargement glands	M16/M20 to M50/M63
Reducing glands	M63/M50 to M25/M20
Blanking plugs	M12 to M63
Screw plugs	M16 to M50
Trumpet-shaped glands	M20 to M63

Apparatus marking acc. to 94/9/EC: II 2 G Ex e II
 $\text{II 2 D Ex ID A21 IP 66}$

EC-type examination certificate:
 KLE M12, M16 CEPEL-EX-075 / 2003X
 KLE M12, M16, M20, M25, M32, M40, M50, M63 PTB 99 ATEX 3128 X; CEPEL-EX-075 / 2003X
 IECEX PTB 05.0004
 Multiple glands (2x, 4x) PTB 99 ATEX 3128 X IECEX PTB 05.0004
 Enlargement glands PTB 99 ATEX 3128 X IECEX PTB 05.0004
 Reducing glands PTB 99 ATEX 3128 X IECEX PTB 05.0004
 Blanking plugs M12, M63 PTB 99 ATEX 3101 X IECEX PTB 05.0004
 Screw plugs M16, M63* PTB 98 ATEX 3130; IECEX PTB 03.0000
 (*no dust certification)
 Trumpet-shaped glands PTB 00 ATEX 3121
 Permissible ambient temperature: -20°C to +70°C (standard version)
 (Other temperatures possible for special versions)
 Perm. storage temperature in original packing: -50°C to +80°C
 Degree of protection to EN/IEC 60529: IP 66 (when fully assembled)

1.2 Technical details for drain plugs

Apparatus marking acc. to 94/9/EC: II 2 G Ex e II
 EC-type examination certificate: PTB 01 ATEX 1128 X *
 Permissible ambient temperature: -20°C to +40°C
 Perm. storage temperature in original packing: -50°C to +80°C
 Degree of protection to EN/IEC 60529: IP 55 (when fully assembled)

* The drain plug shall be protected mounted at the lowest point of the apparatus or enclosure.

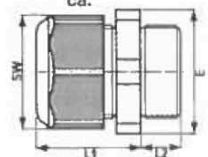
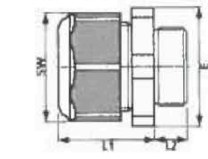
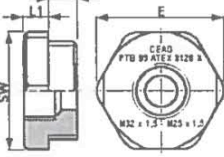
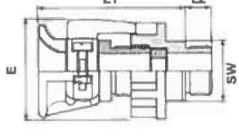
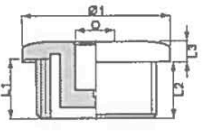
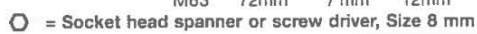
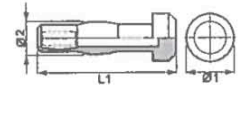
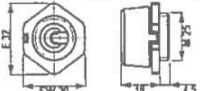
1.3 Test torques at 20°C:

Type	M12 Nm	M16 Nm	M20 Nm	M25 Nm	M32 Nm	M40 Nm	M50 Nm	M63 Nm
Screw-in thread in enclosure	2.50	3.75	3.75	5.00	7.50	7.50	7.50	7.50
Pressure screw of KLE								
for min. cable Ø	2,00	3,00	3,50	5,00	8,00	6,00	16,00	22,00
for max. cable Ø	1,00	2,50	2,50	3,50	5,00	5,00	5,00	5,00
Trumpet intermediate gland	-	-	3,50	4,00	7,50	12,00	35,00	45,00
Trumpet-shaped gland	-	-	3,00	3,00	6,00	10,00	30,00	40,00
Pull relief (screws)	-	-	1,50	2,00	4,00	6,00	10,00	15,00

1.4 Cable clamping ranges:

Cable entry (KLE)	Clamping range	
M12 x 1.5	round cable	Ø 4.0 - 7mm
M16 x 1.5	round cable	Ø 5.5 - 10mm
M20 x 1.5	round cable	Ø 5.5 - 13mm
M25 x 1.5	round cable	Ø 8.0 - 17mm
M32 x 1.5	round cable	Ø 12.0 - 21mm
M40 x 1.5	round cable	Ø 17.0 - 28mm
M50 x 1.5	round cable	Ø 22.0 - 35mm
M63 x 1.5	round cable	Ø 27.0 - 48mm
M25 x 1.5 2x	multiple entry	2x Ø 4.5-7mm
M32 x 1.5 4x	multiple entry	4x Ø 4.5-7mm
M25 x 1.5	flat cable entry	11mm x 8mm / 14mm x 8mm
Trumpet-shaped gland M20		Ø 8 - 13mm
Trumpet-shaped gland M25		Ø 11 - 16mm
Trumpet-shaped gland M32		Ø 15 - 20mm
Trumpet-shaped gland M40		Ø 19 - 27mm
Trumpet-shaped gland M50		Ø 26 - 34mm
Trumpet-shaped gland M63		Ø 35 - 46mm

Cable entries, blanking plugs, screw plugs, trumpet-shaped cable glands, reducing glands and drain plugs

Dimension drawings and dimensions in mm							
	Cable entry, Multiple gland	Type	SW	L1	L2	E	Weight
	M12	15mm	19.3mm	12 / 8mm	16.2mm	3.4 g	
	M16	20mm	23.0mm	12 / 8mm	22.0mm	6.5 g	
	M20	24mm	25.0mm	13 / 8mm	26.5mm	10.1 g	
	M25	29mm	29.5mm	13 / 8mm	32.0mm	16.9 g	
	M32	36mm	35.5mm	15 / 10mm	40.0mm	27.6 g	
	M40	46mm	39.5mm	15 / 10mm	50.5mm	50.3 g	
	M50	55mm	44.0mm	16 / 12mm	60.0mm	75.9 g	
M63	68mm	47.0mm	16 / 12mm	75.0mm	117.6 g		
	Enlargement gland	Type	SW	L1	L2	E	Weight
	M16/M20	24mm	25.0mm	12mm	26.5mm	9.2 g	
	M20/M25	29mm	29.5mm	13mm	32.0mm	16.7 g	
	M25/M32	36mm	35.5mm	15mm	40.0mm	27.0 g	
	M32/M40	46mm	39.5mm	15mm	50.5mm	46.5 g	
	M40/M50	55mm	44.0mm	15mm	60.0mm	73.5 g	
M50/M63	68mm	47.0mm	16mm	75.0mm	106.4 g		
	Reducing gland	Type	SW	L1	L2	E	Weight ca.
	M20/M12	24mm	6.0mm	8mm	26.5mm	9.0 g	
	M25/M20	29mm	6.0mm	8mm	32.0mm	12.5 g	
	M32/M20	29mm	6.0mm	10mm	40.0mm	13.5 g	
	M32/M25	36mm	6.0mm	10mm	40.0mm	13.0 g	
	M40/M25	46mm	6.0mm	10mm	50.5mm	23.0 g	
	M40/M32	46mm	6.0mm	10mm	50.5mm	21.0 g	
	M50/M32	55mm	6.0mm	12mm	60.0mm	72.0 g	
	M50/M40	55mm	6.0mm	12mm	60.0mm	65.0 g	
	M63/M40	68mm	6.0mm	12mm	75.0mm	40.0 g	
M63/M50	68mm	6.0mm	12mm	75.0mm	30.0 g		
	Trumpet-shaped gland	Type	SW	L1	L2	E	Weight
	M20	27mm	64mm	15mm	47mm	0.10 kg	
	M25	32mm	65mm	15mm	51mm	0.11 kg	
	M32	41mm	80mm	15mm	68mm	0.17 kg	
	M40	50mm	86mm	15mm	81mm	0.23 kg	
	M50	60mm	95mm	16mm	96mm	0.45 kg	
M63	75mm	105mm	16mm	107mm	0.55 kg		
	Screw plug	Type	Ø 1	L1	L2	L3	Weight
	M16	21mm	12mm	11mm	4.0mm	2.4 g	
	M20	25mm	13mm	12mm	4.0mm	4.3 g	
	M25	30mm	13mm	12mm	4.0mm	6.6 g	
	M32	37mm	15mm	14mm	5.5mm	12.0 g	
	M40	45mm	15mm	14mm	5.5mm	36.6 g	
	M50	55mm	16mm	15mm	5.5mm	56.6 g	
M63	72mm	/ mm	12mm	11mm	64.5 g		
							
	Blanking plug for cable entry	Type	Ø 1	Ø 2	L1	Weight	
	M12	7mm	6.0mm	30.3mm	1.0 g		
	M16	8mm	7.0mm	33.0mm	1.3 g		
	M20	12mm	8.5mm	34.5mm	6.6 g		
	M25	16mm	11.0mm	36.0mm	2.8 g		
	M32	20mm	14.0mm	39.5mm	4.6 g		
	M40	24mm	20.0mm	42.0mm	7.0 g		
	M50	32mm	26mm	44.0mm	8.0 g		
M63	39mm	34mm	45.0mm	9.0 g			
Drain plug							

2 Safety instructions



The operations must be carried out by electrical suitably trained in hazardous area with knowledge of increased safety explosion protection IEC 60079-14.

All the entries and components listed in these operating and mounting instructions are not suited for use in Zone 0 and Zone 20.

In addition, they may not be used as direct cable entries or seals for flameproof enclosures in potentially explosive atmospheres in Zone 1, Zone 2, and Zone 12, Zone 22.

Modifications or design changes to entries are not permitted. They shall be used for their intended purpose and shall be in a perfect and clean state.

Prior to mounting, check the entries and components, as well as the screw-in threads of the apparatus into which they are to be mounted to ensure that they are in a perfect state.

Warning: If the entries and components are to be screwed directly into the walls, the wall thickness of the apparatus shall be at least 4 mm. Counter-nuts shall be used for walls with a thickness of less than 4 mm.

The requirements of the EN 61241-0 and -1 regarding excessive dust deposits and temperature to be considered from the user.

The national safety rules and regulations for the prevention of accidents, as well as the safety instructions included in these operating instructions, that, like this text, are set in italics, shall be observed!

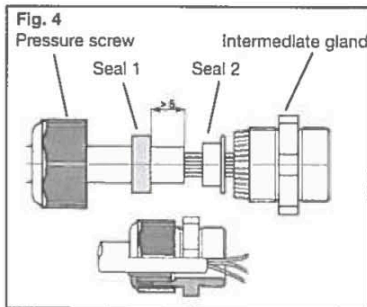
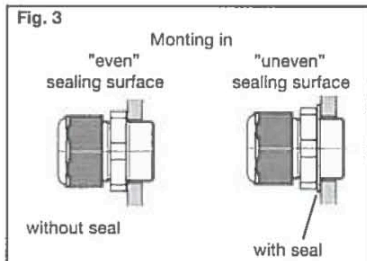
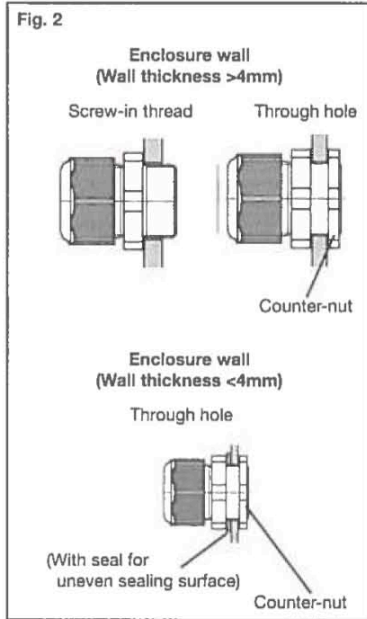
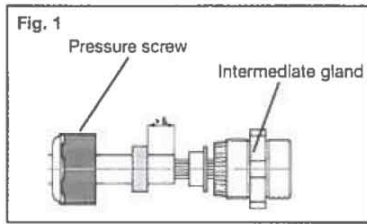
3 Conformity with standards

The apparatus conforms to the standards specified in the EC-Declaration of conformity, enclosed separately.

It has been designed, manufactured and tested according to the state of the art and to DIN EN ISO 9001.

94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres.

Cable entries, blanking plugs, screw plugs, trumpet-shaped cable glands, reducing glands and drain plugs



4 Field of application

The entries and components covered by these instructions (see Technical Data) are suited for mounting in potentially explosive atmospheres in Zone 1, Zone 2 and Zone 21, Zone 22 accordance with IEC 60079-10!

The materials used, including the exterior metal parts, are high quality materials that ensure a corrosion resistance and resistance to chemical substances according to the requirements for use in a "normal industrial atmosphere":

- impact resistant polyamide
- stainless steel AISI 316 L

In case of use in an extremely aggressive atmosphere, please refer to manufacturer

5. Application / Properties

All the cable entries and components covered by these operating and mounting instructions are suited for use in enclosures and apparatus in the type of protection "Increased Safety".

Consider table "Temperature table" on page 18 with installation.

Cable entries and enlargement glands are used for feeding fixed cables into enclosures and apparatus.

Warning: Cables shall be secured in such a way (e.g. with a cable clamp) that they cannot be pulled out of the entry.

Trumpet-shaped cable glands are used for feeding flexible cables into enclosures and apparatus.

Warning: The fitting of seal inserts one inside the other or the interchanging of seal inserts of different entries to reduce the cable opening is not permitted.

Reducing glands can be used to reduce the size of threaded or through holes in enclosures to a smaller thread size.

Warning: The screwing of several reducing glands one inside the other to reduce the threaded or through holes is not permitted.

Blanking plugs are used to seal metric COOPER CROUSE-HINDS cable entries and COOPER CROUSE-HINDS multiple entries.

Screw glands are used to seal unused through and threaded holes.

Any condensation in the apparatus can escape via drain plugs (see 6.1, Mounting).

Applications other than those described are not permissible without a written declaration of consent from Messrs. COOPER CROUSE-HINDS.

The instructions according to section 7 of the operating instructions shall be observed during operation.

The sole responsibility with respect to the suitability and proper use of these entry components with regard to the basic conditions of these instructions (see Technical Data) lies with the operator.

6. Installation

The relevant national regulations and the generally recognized rules of engineering apply for the installation and operation.

The improper installation and operation of enclosures can result in the invalidation of the guarantee.

Observe the special operational conditions accordance to EN/IEC 60069-14.

6.1 Mounting

Warning: Prior to mounting, ensure that the threads of the entry components match the threads of the apparatus or enclosure.

The mounting of entry components with damaged or dirty threads can impair the IP degree of protection.

6.1.1 Cable entries (KLE)

The intermediate gland (see Fig. 1) of the cable entries shall be fitted with a suitable tool, e.g. fork, ring or box spanner. It is mounted directly in the threaded hole or via the through hole of the enclosure (see Fig. 2).

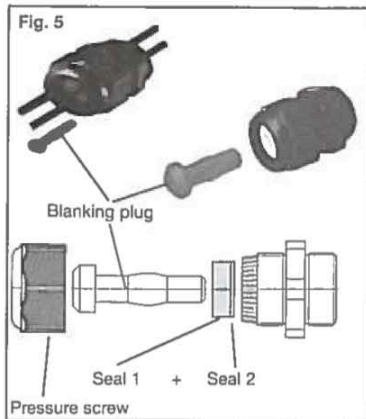
If the sealing surfaces are uneven, seals shall be used between the enclosure wall and the intermediate gland (see Fig. 3). Counter-nuts shall be used for walls with a thickness of less than 4mm (see Fig. 2).

Cables are fed in as shown in Fig. 4. The seal inserts shall be chosen to suit the respective cable diameter (Figs. A,B,C and D).

The intermediate gland and the pressure screw shall be tightened down to ensure the specified minimum degree of protection.

Overtightening can impair the degree of protection.

Cable entries, blanking plugs, screw plugs, trumpet-shaped cable glands, reducing glands and drain plugs



Use COOPER CROUSE-HINDS spanners with a side opening can be used to facilitate the tightening of the pressure screw when the cable entry has been mounted (see Fig. 6).

Order No. GHG 960 1951 R0001 for Set 1 (M12, 16, 20, 25, 32 and 40)

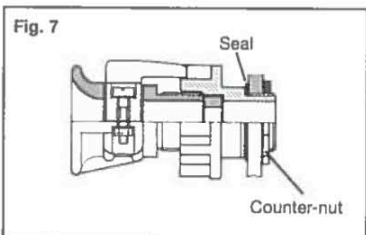
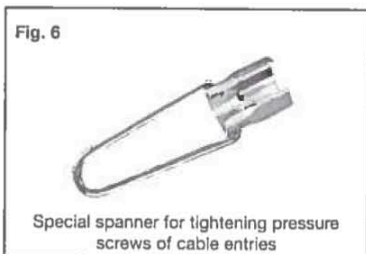
Order No. GHG 960 1951 R0002 for Set 2 (M50 and M63)

Optionally, cable entries with colour-coded (light blue) pressure screws can be used for intrinsically safe circuits (see main COOPER CROUSE-HINDS catalogue for order numbers).

6.1.2 Blanking plugs

The following shall be observed when mounting blanking plugs for COOPER CROUSE-HINDS metric cable entries (see Fig. 5):

1. Only the blanking plug associated to the KLE shall be used.
2. The KLE shall be provided with seal inserts (Seals 1 and 2).
3. The head of the blanking plug shall, as shown in Fig. 5, be on the outside.
4. The blanking plug shall be pushed into the KLE until it reaches the stop.
5. The pressure screw of the KLE shall be tightened down as described in 6.1.1.

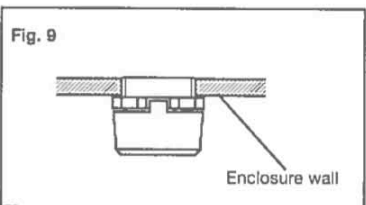
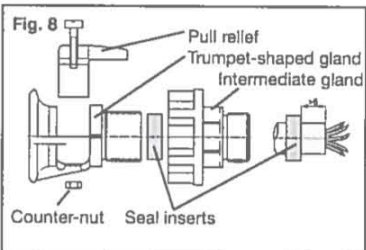


6.1.3 Screw plug

The screw plug shall be screwed tightly into the threaded hole in the enclosure using a suitable tool, e.g. 8 mm socket head spanner or a suitable screw driver.

A counter-nut shall be used for through holes or enclosures that are less than 4 mm thick. An additional seal shall be used for uneven sealing surfaces.

Warning: In general, the M50 screw plug shall be mounted together with the seal supplied.



6.1.4 Trumpet-shaped gland

A suitable tool, e.g. a fork spanner, shall be used for mounting the intermediate gland in the trumpet-shaped gland in such a way that it cannot twist.

It is necessary to ensure that the gland cannot twist once the cable has been fed in and the trumpet-shaped gland mounted (e.g. by using a counter-nut, see Figs. 7 + 8). A counter-nut shall be used for through holes or enclosures that are less than 4 mm thick. When mounting, a seal shall always be used between the enclosure wall and intermediate gland (see Fig. 7).

The following describes the mounting of the cable in the trumpet-shaped gland, as shown in Fig. 8:

1. Cut out the individual rings of the "onion ring" seal insert to match the respective cable diameter.
2. After feeding in the cable, that has been cut to length and has the seal mounted, into the intermediate gland, screw the trumpet-shaped gland tightly into the intermediate gland to seal off the cable.
3. Then mount the pull relief on the trumpet-shaped gland.

It is necessary to ensure that there is sufficient pull relief, that damage to the cable is not possible and that the trumpet-shaped gland cannot twist.

6.1.5 Reducing gland

A suitable tool, e.g. a fork, ring or box spanner, shall be used for screwing the reducing gland tightly into the threaded hole in the enclosure.

A counter-nut shall be used for through holes or enclosures that are less than 4 mm thick. An additional seal shall be used for uneven sealing surfaces.

Warning: Screwing several reducing glands one inside the other to reduce the size of the entry thread is not permitted.

6.1.6 Drain plug

A suitable tool, e.g. a fork, ring or box spanner, shall be used for screwing the drain plug tightly into the threaded hole in the enclosure.

An additional seal shall be used for uneven sealing surfaces.

The drain plug shall be mounted at the lowest point of the apparatus or enclosure (see Fig. 9).

Cable entries, blanking plugs, screw plugs, trumpet-shaped cable glands, reducing glands and drain plugs

Warning: The minimum wall thickness may not be less than 4 mm.

Entry components shall be screwed in tightly to ensure the specified minimum degree of protection (see Technical Data, page 3 for test torques).

Overtightening can impair the degree of protection.

6.2 Putting into operation

Prior to putting the mounted entry components into operation, the tests specified in the individual national regulations shall be performed.

In addition to this, prior to putting the entries into operation, the correct mounting shall be checked in accordance with these operating and mounting instructions and any other applicable regulations.

In locations where they are particularly at risk, the entries shall be safeguarded against being torn out of the apparatus or enclosure walls by external mechanical influences (e.g. by fork lift trucks, by knocking or similar).

7 Maintenance / Servicing

The valid national regulations for the servicing / maintenance of electrical apparatus for use in potentially explosive atmospheres shall be observed (e.g. EN 60 079-17).

The necessary intervals between servicing depend upon the specific application and shall be stipulated by the operator according to the respective operating conditions.

As part of the routine testing, above all, parts on which the explosion protection depends shall be checked (e.g. intactness of entry components and seals).

Pressure screws of cable entries, trumpet-shaped glands of trumpet-shaped cable entries shall be checked at regular intervals to ensure that they are screwed in tightly and, if necessary, they shall be tightened down.

If, in the course of servicing, it is ascertained, that repairs are necessary, section 8 of these operating instructions shall be observed.

8 Repairs / Modifications

Only original COOPER CROUSE-HINDS parts shall be used for carrying out repairs that concern the explosion protection.

Repairs that affect the explosion protection may only be carried out by COOPER CROUSE-HINDS or by a qualified electrician in compliance with the respective national regulations. (e.g. EN 60 079-19).

Modifications to the entry components are not permitted.

9 Disposal / Recycling

The respective valid national regulations for waste disposal shall be observed when disposing of apparatus.

To facilitate recycling of individual parts, parts made of moulded plastic bear the marking for the type of plastic used.

The product range is subject to changes and additions.



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

PTB 99 ATEX 3101 X

(4) Equipment: Cable and conduit entry, type GHG 960 923. P... size M12 x 1,5 and M16 x 1,5

(5) Manufacturer: CEAG Sicherheitstechnik GmbH

(6) Address: Neuer Weg Nord 49, D-69412 Eberbach

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC 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 confidential report PTB Ex 99-30113.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50 014:1997 EN 50 019:1994

(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 schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

II 2 G EEx e II

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, November 16, 1999

Dr.-Ing. U. Engel
Regierungsdirektor

sheet 1/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3101 X**

(15) Description of equipment

The cable entry, type GHG 960 923. P... made of polyamide serves to introduce permanently laid cables into electrical equipment of the type of protection Increased Safety "e". The cable entry is composed of intermediate glands, a sealing ring of different materials and a cap nut. Accessoire is a blanking element. They are installed in enclosures with through-holes or threaded holes, with or without lock nut.

Technical data

Nominal size	to be used for cable and conduit diameters
M 20 x 1,5 (with long internal thread)	from 5,5 mm to 13,0 mm
M 12 x 1,5	from 4,0 mm to 7,0 mm
M 16 x 1,5	from 5,5 mm to 10,0 mm
Range of temperatures of use, normal:	-20 °C to +70 °C
Expanded range of temperatures of use, depending on material of sealings:	neoprene: -30 °C to +70 °C nitrile rubber NBR: -40 °C to +70 °C silicone: -55 °C to +70 °C evoprene: -50 °C to +70 °C

Suitable for equipment of group II with a degree of mechanical hazard:	low
Installation in equipment with wall thicknesses of:	at least 1,5 mm
Protection against contact, foreign matter and water:	at least IP 54 acc. to EN 60 529:1991

(16) Report PTB Ex 99-30113

(17) Special conditions for safe use

Only permanently laid cables and conduits may be entered. The user must guarantee suitable clamping.
The maximum thermal load of the cables and conduits entered is to be taken into account.
The cable entries may be used only in places where they are protected against the influence of mechanical danger.

(18) Essential health and safety requirements

The degree of protection - at least IP 54 according to EN 60529:1991 - will be guaranteed only by adequate selection of cable and conduit entries, of the sealings tested and by proper installation of the cable and conduit entries into the electrical apparatus.

Zertifizierungsstelle Explosionschutz

Braunschweig, November 16, 1999

By order:


Dr.-Ing. U. Engel
Regierungsdirektor



sheet 2/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3101 X

(Translation)

Equipment: Cable entry, type GHG 960 923. P.
sizes M12 x 1.5 and M16 x 1.5

Marking:  II 2 G EEx e II

Manufacturer: CEAG Sicherheitstechnik GmbH

Address: Neuer Weg Nord 49
69412 Eberbach, Germany

Description of supplements and modifications

The cable entry, type GHG 960 923. P....., sizes M12 x 1.5 and M16 x 1.5, may optionally also be made from the plastic material Frianyl.

Technical data

Nominal size	Conductor cross section	Suited for mechanical risk level	Maximum operating temperature range
M 12 x 1.5	4.0 mm to 7.0 mm	low	-20 °C to + 70 °C
M 16 x 1.5	5.5 mm to 10.0 mm	low	-20 °C to + 70 °C

Installed in units of the following wall thickness: 1.5 mm as a minimum

Shock protection, protection against solid bodies, and protection against ingress of water: IP 54 according to EN 60529 as a minimum

Special conditions

The special conditions specified shall also apply to this supplement.

Test report: PTB Ex 02-12278

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, September 06, 2002


Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

2nd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3101 X

(Translation)

Equipment: Cable entry, type GHG 960 923. P....
sizes M12 x 1.5 and M16 x 1.5

Marking:  II 2 G EEx e II

Manufacturer: CEAG Sicherheitstechnik GmbH

Address: Neuer Weg Nord 49
69412 Eberbach, Germany

Description of supplements and modifications

Standard applied: EN 50281-1-1:1998

The cable entry, type GHG 960 923. P...., sizes M12 x 1.5 and M16 x 1.5, may also be employed in areas in which explosive atmospheres with dust/air mixtures have to be expected to occur. The marking, therefore, changes to read:

 II 2 G/D EEx e II IP 66


Special conditions for safe use

The special conditions shall also apply to this supplement.

Test report: PTB Ex 03-13279

Zertifizierungsstelle Explosionsschutz

By order:

Dr.-Ing. U. Klauerner
Regierungsdirektor

Braunschweig, September 25, 2003

Sheet 1/1

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig

3rd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3101 X (Translation)

Equipment: Cable entry fitting, type GHG 960 923. P...., sizes M12 x 1.5 and M16 x 1.5

Marking:  II 2 G EEx e II
 II 2 D IP66

Manufacturer: Cooper Crouse-Hinds GmbH

Address: Neuer Weg Nord 49, 69412 Eberbach, Germany

Description of supplements and modifications

Cable entry fitting, type GHG 960 923. P...., sizes M12 x 1.5 and M16 x 1.5, is renamed to :
Type GHG 960 :

The cable entry fitting has been re-inspected on the basis of standards EN 60079-0, EN 60079-7, EN 61241-0, and EN 61241-1.

The marking thus changes to:

 II 2 G Ex e II

 II 2 D Ex tD A21 IP 66

Technical data

Nominal size	Conductor size	Degree of mechanical risk	Maximum working temperature range	Tightening torque
M 12 x 1.5	4.0 mm to 7.0 mm	Low	-20 °C to + 70 °C	2.5 Nm
M 16 x 1.5	5.5 mm to 10.0 mm	Low	-20 °C to + 70 °C	3.75 Nm

Installed in devices with wall thickness: Min. 1.5 mm

Shock protection and protection against ingress of solid foreign bodies and water IP 66 in compliance with EN 60529

Sheet 1/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • 38116 Braunschweig, Germany

Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

3rd SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 3101 X

Special conditions

The cable entry fittings may only be installed in locations in which they are protected against the effects of mechanical hazards.

Only permanently wired cables may be entered. The user must provide the required strain relief.

The degree of protection will only be safeguarded when suitable cable entry fittings and tested seals are used, and when the fittings are installed in the electrical equipment in a workmanlike manner.

When selecting the tested sealing elements, the maximum thermal loading capacity of cables entered must be considered.

Applied standards

EN 60079-0:2006

EN 60079-7:2007

EN 61241-0:2006

EN 61241-1:2004

Test report: PTB Ex 07-17337

Zertifizierungsstelle Explosionsschutz

Braunschweig, December 11, 2007

By order:


Dr.-Ing. M. Thedens
Oberregierungsrat



Sheet 2/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • 38116 Braunschweig, Germany

SCAN FOR INSTALLATION VIDEOS



INSTALLATION INSTRUCTIONS FOR CMP CABLE GLAND TYPE "E"

FOR TERMINATION OF CABLES WITH WIRE BRAID, TAPE ARMOUR (STA/DSTA), STRIP ARMOUR & SINGLE WIRE ARMOUR (SWA) (WITH LEAD INNER SHEATH ON "E2" VARIANT). FOR USE IN HAZARDOUS LOCATIONS.

INCORPORATING EC DECLARATION OF CONFORMITY TO DIRECTIVE 2014/34/EU

CABLE GLAND TYPES E1FW, E2FW, E1FX, E2FX, E1FU & E2FU



E1FW - SWA Armour for lead sheathed cable
E2FW - Braid, Tape, etc Armour for lead sheathed cable
E1FX - Universal Gland for all Armour Types
E2FX - Universal Gland for all Armour types with lead sheathed cable

TECHNICAL DATA

CABLE GLAND TYPE

- : IP66, IP67, IP68 (available upon request)
- : ISO 9001:2015
- : ISO 14001:2015
- : IEC 60079-0:2009

EXPLOSIVE ATMOSPHERES CLASSIFICATION

- : ATEX CERTIFICATION No. : SR013AE00071X, SR013AE04077X
- : IECEx Certificate No. : IECEx 11C Gb / Ex nR IIC Gc / Ex ta IIC Da
- : IECEx Certificate No. : IECEx SR 130068X
- : IECEx Certificate No. : IECEx 11C Gb / Ex nR IIC Gc / Ex ta IIC Da
- : IECEx Certificate No. : IECEx 11C Gb / Ex nR IIC Gc / Ex ta IIC Da
- : IECEx Certificate No. : IECEx 11C / Ex e II / Ex nR II, Class I, Zone 1, AEx e II / AEx nR II

INSTALLATION INSTRUCTIONS

- : Installation should only be performed by a competent person using the correct tools. Read all instructions before beginning installation.
- : For ATEX & IECEx certification.
- : I, E Type glands used for terminating leaded cables are only suitable for fixed installations. Cables must be clamped to prevent pulling or twisting.
- : FOR cCSAus, Certification:

SPECIAL CONDITIONS FOR SAFE USE

- : These glands are not suitable for use with flameproof enclosures installed in Group IIC atmospheres which have a volume greater than 2000 cc (0.071 cu ft).
- : These glands are for use with Certified Marine Shipboard metal braided cables constructed in accordance to cCSAus S42.245 and IECEx IEC60092-353 Standards, or Certified equivalent, for use on ships and offshore installations only

ACCESSORIES

- : The following accessories are available from CMP Products, as optional extras, to assist with fixing, sealing and earthing : Locknut, Entry Ring, Sealant Washer, Entry Thread (ET) Sealing Washer, Shield

Number of turns to tighten	Outer Seal Tightening Guide																												
	20516		205		20		255		25		32		40		50S		50		63S		63		75S		75				
0.5	13.2	15.9	20.9	22.0	26.2	33.9																							
1	12.5	15.3	20.0	21.2	25.4	32.9	40.4	46.7	52.8	59.2																			
1.5	11.9	14.7	19.0	20.4	24.6	31.9	39.0	45.4	51.4	57.7	64.6	70.6	77.2																
2	11.2	14.2	18.1	19.6	23.8	30.8	37.6	44.1	50.0	56.2	63.4	69.2	75.9																
2.5	10.5	13.6	17.2	18.8	23.0	29.8	36.2	42.9	48.7	54.7	62.1	67.7	74.6																
3	9.8	13.0	16.2	18.0	22.2	28.8	34.8	41.6	47.3	53.2	60.9	66.3	73.3																
3.5	9.2	12.4	15.3	17.2	21.4	27.8	33.5	40.3	45.9	51.6	59.6	64.8	71.9																
4	8.5	11.8	14.4	16.4	20.6	26.8	32.1	39.0	44.5	50.1	58.4	63.4	70.6																
4.5	7.8	11.2	13.4	15.6	19.8	25.7	30.7	37.8	43.2	48.6	57.1	61.9	69.3																
5	7.1	10.7	12.5	14.8	19.0	24.7	29.3	36.5	41.8	47.1	55.9	60.5	68.0																
5.5	6.5	10.1	12.0	14.0	18.2	23.7	27.9	35.2	40.4	45.6	54.6	59.0	66.7																
6	5.8	9.5																											

Cable Gland Size	Metric	Imperial	Option	Thread	Cable Bedding Diameter			Overall Cable Diameter			Grooved Cone			Amour Wire Diameter			Stepped Cone			Across Ribs			Across Conns			Protrusion Length	Ordering Reference (Gross Metric)	PVC Shield Ref.
					Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min			
20516	1/2"	3/4"	15.0	3.1	8.6	6.1	11.6	9.5	15.9	0.15	0.3	0.8	1.25	24.0	26.4	58.5	205E1FU101RA	PK04										
205	M20	1/2"	3/4"	15.0	3.1	8.6	6.1	11.6	9.5	15.9	0.15	0.3	0.8	1.25	24.0	26.4	58.5	205E1FU101RA	PK04									
20	M20	1/2"	3/4"	15.0	6.5	13.9	12.5	20.9	0.2	0.5	0.8	1.25	30.5	33.6	60.5	205E1FU101RA	PK06											
25S	M25	3/4"	1"	15.0	11.1	19.9	14.0	22.0	0.2	0.6	1.25	1.6	37.5	41.3	67.5	255E1FU101RA	PK09											
25	M25	3/4"	1"	15.0	11.1	19.9	14.0	22.0	0.2	0.6	1.6	2.0	46.0	50.6	69.5	32E1FU101RA	PK11											
32	M32	1"	1 1/4"	15.0	17.0	26.2	23.7	33.9	0.2	0.6	1.6	2.0	55.0	60.5	78.0	40E1FU101RA	PK15											
40	M40	1 1/4"	1 1/2"	15.0	22.0	32.1	27.9	40.4	0.2	0.8	2.0	2.5	60.0	66.0	75.5	50E1FU101RA	PK18											
50S	M50	1 1/2"	2"	15.0	29.5	38.1	35.2	46.7	0.2	0.8	2.0	2.5	70.0	77.0	80.5	50E1FU101RA	PK21											
50	M50	2"	2 1/2"	15.0	35.6	44.0	40.4	53.1	0.3	0.8	2.0	2.5	75.0	82.5	91.5	63E1FU101RA	PK23											
63S	M63	2"	2 1/2"	15.0	40.1	49.9	45.6	59.4	0.3	0.8	2.0	2.5	80.0	88.0	92.0	63E1FU101RA	PK23											
63	M63	2 1/2"	3"	15.0	47.2	55.9	51.6	65.9	0.3	0.8	2.0	2.5	80.0	88.0	92.0	63E1FU101RA	PK23											
75S	M75	3"	3 1/2"	15.0	52.8	61.9	59.0	72.1	0.3	0.8	2.0	2.5	90.0	97.9	102.0	75E1FU101RA	PK28											
75	M75	3"	3 1/2"	15.0	59.1	67.9	66.7	78.5	0.3	0.8	2.5	3.0	99.0	108.9	120.0	75E1FU101RA	PK30											
90	M90	3"	4"	24.0	66.6	79.9	76.2	90.4	0.4	0.8	3.0	3.5	114.0	125.4	148.0	100E1FU101RA	PK32											
100	M100	4"	5"	24.0	76.0	90.9	86.1	101.5	0.4	0.8	3.15	4.0	123.0	135.3	169.0	100E1FU101RA	PK32											
115	M115	4"	5"	24.0	86.0	97.9	101.5	110.3	0.4	0.8	3.15	4.0	133.4	146.7	189.0	115E1FU101RA	PK34											
130	M130	5"	6"	24.0	97.0	114.9	114.2	123.3	0.4	0.8	3.15	4.0	146.0	160.7	183.0	130E1FU101RA	PK35											

Order codes shown are for E1Fu glands - For e.g. E1FW0 substitute E1FU0 for E1Fu - e.g. 20E1FU101RA

* Please note that the overall maximum cable bedding diameter for "E2" variants should be reduced by 1mm to allow for the inner lead sheath.

† The undersized, hereby declare that the equipment referred to herein conforms to the requirements of the ATEX Directive 2014/34/EU and the following standards:

EN 60079-0:2012, EN 60079-1:2007, EN 60079-2:2007, EN 60079-15:2010, EN 60079-31:2009, BS 6171:1989, EN 62444:2013

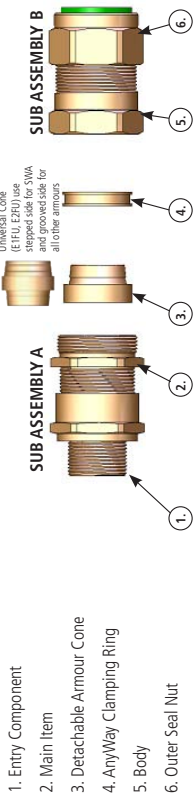
David Wilcock
David Wilcock - Certification Engineer (Authorised Person)

CE 0518
Notified Body: Sira Certification Service, Blake Lane, Chester CH4 9JN, England.



INSTALLATION INSTRUCTIONS FOR CMP CABLE GLAND TYPES "E"

CABLE GLAND COMPONENTS - It is not necessary to disassemble the cable gland any further than illustrated below

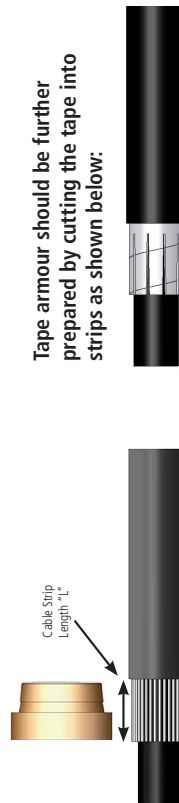


1. Entry Component
2. Main Item
3. Detachable Armour Cone
4. AnyWay Clamping Ring
5. Body
6. Outer Seal Nut

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE BEGINNING THE INSTALLATION

1. If required fit shroud over the cable outer sheath;

Prepare the cable by stripping back the cable outer sheath and armour to suit the equipment geometry. Expose the armour by stripping back the outer sheath further using the table below as a guide. If applicable remove any tapes or wrappings to expose cable inner sheath.



Tape armour should be further prepared by cutting the tape into strips as shown below:

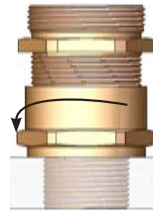
CABLE GLAND SIZE	205/16, 205, 20	255, 25, 32, 40	505, 50, 635, 63	755, 75, 90, 100, 115, 130
CABLE STRIP LENGTH "L"	12mm	15mm	18mm	20mm

2. Separate the gland into two sub-assemblies "A & B". Ensuring that the Outer Seal Nut (6) is relaxed, pass sub-assembly "B" over the cable outer sheath and armour followed by the "AnyWay" clamping ring (4).

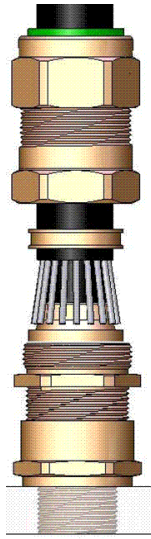


Note: On maximum size cables the clamping ring may only pass over the armour.

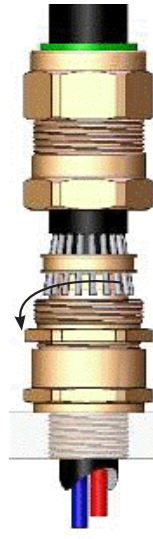
3. Ensure that the inner seal is relaxed by slackening the Main Item (2). Secure sub-assembly "A" into the equipment either by screwing the Entry Item (1) into a threaded hole or by securing it in a clearance hole using a locknut as applicable.



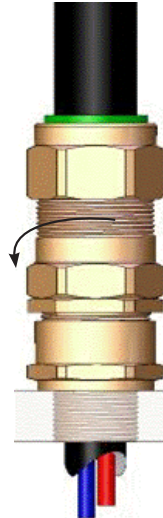
4. Locate the Armour Cone (3) into its recess in the Main Item (2). (N.B. For E1FU and E2FU variants, make sure the correct side of the cone is outermost - grooved for braid/tape armour and stepped for SWA). Pass the cable through sub-assembly "A" until the armour engaged with the cone. Spread the armour evenly around the cone.



5. While continuing to push the cable forward to maintain contact between the armour and the cone, tighten the Main Item (2) until the inner seal makes contact with the cable inner sheath (heavier resistance is felt at this point). Tighten a further full turn. NOTE: The earthing device on E2* type glands will automatically engage the lead sheath.



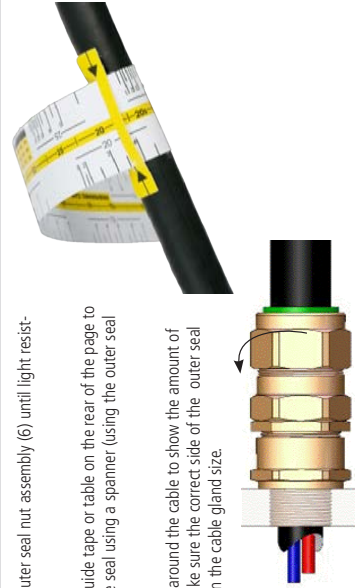
6. Hold the Main Item (2) with a spanner and tighten sub-assembly "B" onto sub-assembly "A" using a spanner until all available threads are used.



7. Only using finger pressure, tighten the outer seal nut assembly (6) until light resistance to tightening is met.

Then either use the outer seal tightening guide tape or table on the rear of the page to determine how much further to tighten the seal using a spanner (using the outer seal tightening guide is recommended).

Wrap the outer seal tightening guide tape around the cable to show the amount of spanner turns needed (as shown here). Make sure the correct side of the outer seal tightening guide tape is used depending on the cable gland size.





1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 13ATEX1071X** Issue: **0**

4 Equipment: **Cable Gland Types E****

5 Applicant: **CMP Products Ltd**

6 Address: **Glasshouse Street
St Peters
Newcastle upon Tyne, NE6 1BS
UK**

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC 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 intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012 EN 60079-1:2007 EN 60079-7:2007 EN 60079-31:2009

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

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 schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



IM2
Ex e I Mb
Ex d I Mb



II 2G
Ex e IIC Gb
Ex d IIC Gb



II 1D
Ex ta IIIC Da

Ta = -60°C to +130°C ①
-20°C to +200°C ②

① When fitted with the standard seal

② When fitted with the high temperature seal

P J Walsh
Technical Advisor

Project Number 27765

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Form 9400 Issue 3

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EC TYPE-EXAMINATION CERTIFICATE

Sira 13ATEX1071X

Issue 0

13 DESCRIPTION OF EQUIPMENT

The E** series Type ranges of cable glands consist of a male-threaded front entry component containing an elastomeric sealing ring and a Nylon 6 skid washer which effect flameproof sealing onto the cable inner sheath and is intended to screw into an entry point of its associated enclosure in accordance with relevant codes of practice. The flameproof seal is actuated by an adjoining coupling component. The coupling component is attached to a main body. Their mating thread may be fitted with an optional 'O' ring seal to provide increased ingress protection. Clamping of the armoured or braided cable is effected by a combination of the coupling component, main body and the different optional armour cone and armour sleeve combinations being fastened together. An outer seal nut, containing an elastomeric sealing ring and a Nylon 6 ferrule, threads onto the main body and effects environmental sealing onto the cable outer sheath.

Design options

- The front entry component may be manufactured with a profiled groove to captivate an 'O' ring seal which locates on the mating face with the associated enclosure. This option having the gland type designation prefixed with the letter R, e.g. 25RE1FW.
- Materials of manufacture:
 - Brass to EN12168:1998 Grade CuZn39Pb (CW614N)
 - Mild steel to BS EN 10088-3:2005 Grade 220M07Pb
 - Stainless steel to BS EN 10088-3:2005 Grade 316S11, 316S13, 316S31 or 316S33
 - Aluminium alloy not inferior to grade 6082 to EN755,1-3:1996 or LM25 to BS EN 1676:2010 (Not Group I)
- Alternative entry component thread forms:
 - Metric ISO 965-1, ISO965-3 medium fit (6g) for external threads
 - ET(Conduit) BS 31:1940 (1979), Table A
 - PG DIN 40430:1971
 - BSPP BS 2779:1973 class A full form for external threads
 - BSPTBS 21:1985 standard threads only as clause 5.4, gauging to clause 5.2 system A
 - ISO ISO 7/1:1982, gauging to ISO 7/2 clause 6.3 for external threads
 - NPT ANSI/ASME B1.20.1-1983 gauging to clause 8.1 for external threads
 - NPSMANSI/ASME B1.20.1-1983 gauging to clause 9 for external threads
- The option to manufacture glands with entry threads that are one size up from the nominal quoted gland size.
- The use of alternative armour clamping components specified by the cable gland type designation. The various arrangements vary the cable gland suitability for differing armour or braided type cables.
- The use of a component having an alternative profile allowing an integral earthing facility. The type designation identifying the cable gland being fitted with this option.
- The use of metallic continuity diaphragm component specified by the cable gland type designation for use when terminating lead sheathed cables.
- The use of an earthing device component specified by the cable gland type designation for use with variable speed drive (VSD) / variable frequency drive (VFD) cables.
- Alternative material of manufacture of the ferrule to be the same as the gland material.
- The use of seals suitable for flat form cables
- The use of an O ring seal between the body and the entry item to provide a deluge seal.

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**Sira 13ATEX1071X
Issue 0**

- Alternative outer seal arrangement to allow the glands to be fitted to flexible conduit.
- The option to fit a blanking disc between the outer seal and the main body to maintain a minimum IP66 rating. The disc is to be marked 'Ex e only' to indicate that the gland is not suitable for Ex d applications when the disc is fitted.

The gland and seal sizes are determined by the entry thread and cable range take sizes:

Gland size	Entry thread	Entry thread 'B' version	Inner seal sheath range Ø (mm)		SWA (mm)		SWA, STA, strip armour, pliable wire armour* & wire braid (mm)		Outer seal sheath range Ø (mm)	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
16	M16 x 1.5	-	3.1	8.6	0.8	1.25	0	0.8	6.1	13.2
20s/16	M20 x 1.5	M25 x 1.5	3.1	8.6	0.8	1.25	0	0.8	6.1	13.2
20s16/20s	M20 x 1.5	M25 x 1.5	3.1	8.6	0.8	1.25	0	0.8	9.5	15.9
20s	M20 x 1.5	M25 x 1.5	6.1	11.6	0.8	1.25	0	0.8	9.5	15.9
20s/20	M20 x 1.5	M25 x 1.5	6.1	11.6	0.8	1.25	0	0.8	12.5	20.9
20	M20 x 1.5	M25 x 1.5	6.5	13.9	0.8	1.25	0	0.8	12.5	20.9
20/25S	M20 x 1.5	M25 x 1.5	6.5	13.9	1.25	1.6	0	1.1	14.0	22.0
20/25	M20 x 1.5	M25 x 1.5	6.5	13.9	1.25	1.6	0	1.1	18.2	26.2
25s	M25 x 1.5	M32 x 1.5	11.1	19.9	1.25	1.6	0	1.1	14.0	22.0
25	M25 x 1.5	M32 x 1.5	11.1	19.9	1.25	1.6	0	1.1	18.2	26.2
25/32	M25 x 1.5	M32 x 1.5	11.1	19.9	1.6	2.0	0	1.2	23.7	33.9
32	M32 x 1.5	M40 x 1.5	17.0	26.2	1.6	2.0	0	1.2	23.7	33.9
32/40	M32 x 1.5	M40 x 1.5	17.0	26.2	1.6	2.0	0	1.2	27.9	40.4
40	M40 x 1.5	M50 x 1.5	22.0	32.1	1.6	2.0	0	1.2	27.9	40.4
40/50s	M40 x 1.5	M50 x 1.5	22.0	32.1	2.0	2.5	0	1.5	35.2	46.7
50s	M50 x 1.5	M63 x 1.5	29.5	38.1	2.0	2.5	0	1.5	35.2	46.7
50s/50	M50 x 1.5	M63 x 1.5	29.5	38.1	2.0	2.5	0	1.5	40.4	53.1
50	M50 x 1.5	M63 x 1.5	35.6	44.0	2.0	2.5	0	1.5	40.4	53.1
50/63s	M50 x 1.5	M63 x 1.5	35.6	44.0	2.0	2.5	0	1.5	45.6	59.4
63s	M63 x 1.5	M75 x 1.5	40.1	49.9	2.0	2.5	0	1.5	45.6	59.4
63s/63	M63 x 1.5	M75 x 1.5	40.1	49.9	2.0	2.5	0	1.5	54.6	65.9
63	M63 x 1.5	M75 x 1.5	47.2	55.9	2.0	2.5	0	1.5	54.6	65.9
63/75s	M63 x 1.5	M75 x 1.5	47.2	55.9	2.0	2.5	0	1.5	59.0	72.1
75s	M75 x 1.5	M90 x 2.0	52.8	61.9	2.0	2.5	0	1.5	59.0	72.1
75s/75	M75 x 1.5	M90 x 2.0	52.8	61.9	2.5	3.0	0	1.5	66.7	78.5
75	M75 x 1.5	M90 x 2.0	59.1	67.9	2.5	3.0	0	1.5	66.7	78.5
75/90	M75 x 1.5	M90 x 2.0	59.1	67.9	3.0	3.5	0	1.6	76.2	90.4
90	M90 x 2.0	M100 x 2.0	66.6	79.9	3.0	3.5	0	1.6	76.2	90.4
90/100	M90 x 2.0	M100 x 2.0	66.6	79.9	3.15	4.0	0	1.6	86.1	101.5
100	M100 x 2.0	M115 x 2.0	76.0	90.9	3.15	4.0	0	1.6	86.1	101.5
100/115	M100 x 2.0	M115 x 2.0	76.0	90.9	3.15	4.0	0	1.6	101.5	110.3
115	M115 x 2.0	M130 x 2.0	86.0	97.9	3.15	4.0	0	1.6	101.5	110.3
115/130	M115 x 2.0	M130 x 2.0	86.0	97.9	3.15	4.0	0	1.6	110.2	123.3
130	M130 x 2.0	N / A	97.0	114.9	3.15	4.0	0	1.6	110.2	123.3

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SCHEDULE

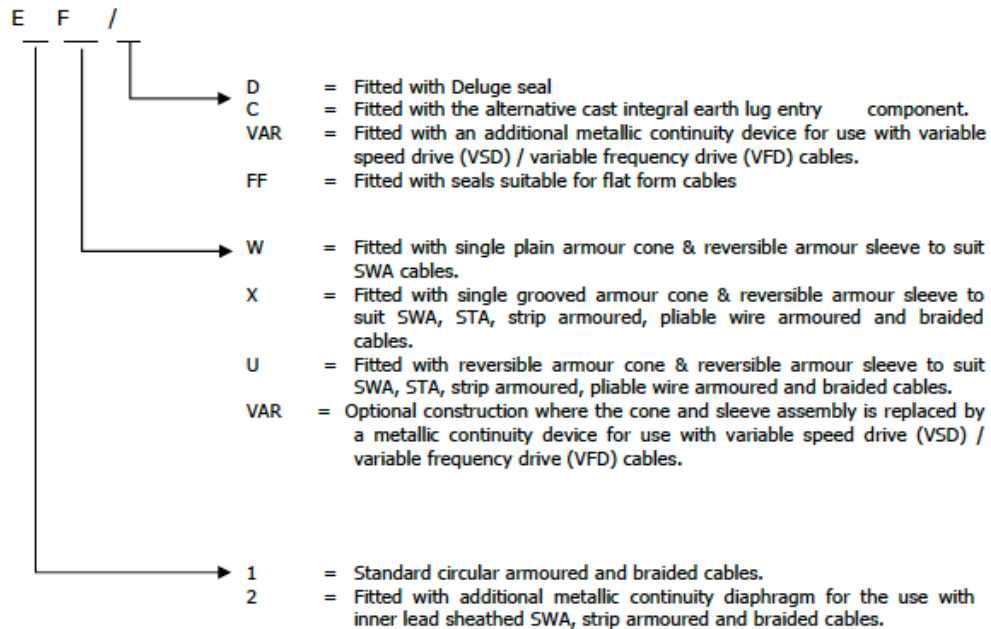
EC TYPE-EXAMINATION CERTIFICATE

**Sira 13ATEX1071X
Issue 0**

E*-FF in these sizes only.

Gland size	Entry thread	Entry thread 'B' version	Cable inner seal sheath range-(mm)		Cable outer seal sheath range (mm)	
			Min.	Max.	Min.	Max.
20s	M20 x 1.5	M25 x 1.5	4.0 x 6.2	6.8 x 11.7	4.4 x 7.8	6.8 x 11.7
20	M20 x 1.5	M25 x 1.5	5.7 x 8.0	8.7 x 13.5	4.4 x 10.9	8.7 x 16.0

Type designation code



14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	29 April 2013	R27765A/00	The release of the prime certificate.

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EC TYPE-EXAMINATION CERTIFICATE

**Sira 13ATEX1071X
Issue 0**

- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
- 15.1 The E**-Type cable glands shall not be used to terminate on braided cables in group I applications.
- 15.2 The glands when used for terminating braided cables are only suitable for fixed installations. Cables must be effectively clamped to prevent pulling or twisting.
- 15.3 When the cable glands are supplied with an entry thread that is one size up from the nominal gland size, designated with the letter 'B' after the gland size, e.g. 32B****, they shall not be used with any adaptor device.
- 15.4 When assembled for fitting to flexible conduit, the conduit shall be effectively clamped to prevent twisting and pulling.
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)**
- The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.
- 17 **CONDITIONS OF CERTIFICATION**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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M20 / M25 Blanking plugs

New

SKINDICHT® Accessories metric

Brass blind plugs



SKINDICHT® BL-M
6kt.
Hexagonal blind plug with
guiding notch for O-ring
(recess)

Hexagonal brass blind plugs
with metric thread according
EN 50262 for ensuring the
protection class for not used
threaded holes, incl. O-ring.



Technical Data	Material:	Temperature range:	Protection class:	On request:	Note:
SKINDICHT® BL-M 6kt.	Nickel plated brass	-30°C up to +100°C	IP 68	O-ring Viton® -20°C up to +200°C	data sheet on request

Part number	Type size	Outer-Ø mm	Wrench size mm	PU pieces
SKINDICHT® BL-M 6kt.				
5210 3405	12 x 1,5	17,8	16	50
5210 3415	16 x 1,5	22,0	20	50
5210 3425	20 x 1,5	26,4	24	50
5210 3435	25 x 1,5	31,9	29	50
5210 3445	32 x 1,5	39,6	36	25
5210 3455	40 x 1,5	49,5	45	25
5210 3465	50 x 1,5	59,0	54	10
5210 3475	63 x 1,5	73,5	67	10

Viton® is a registered trademark of DuPont de Nemours.



SKINDICHT® BL-M
ATEX
Approval no.:
II 2G / 1D
IBExU 03 ATEX 1011

Nickel plated brass blind plugs
ATEX with guiding notch for
O-ring (recess) and metric
connection thread acc. to EN
50262 zur ensure the protec-
tion class for existing thread
holes which are not in use.



Technical Data	Material:	Temperature range:	Protection class:	Note:
SKINDICHT® BL-M ATEX	Nickel plated brass O-ring: NBR	-30°C up to +90°C	IP 68	Data sheet on request

Part number	Type	Wrench size mm	Thread length mm	Outer-Ø mm	PU pieces
SKINDICHT® BL-M ATEX					
5210 3103	12 x 1,5	16	5	17,8	50
5210 3113	16 x 1,5	20	5	22,0	50
5210 3123	20 x 1,5	24	6	26,4	50
5210 3133	25 x 1,5	29	7	31,9	50
5210 3143	32 x 1,5	36	8	39,6	25
5210 3153	40 x 1,5	45	8	49,5	25
5210 3163	50 x 1,5	54	9	59,0	10
5210 3173	63 x 1,5	67	10	73,5	10

10.54

IBExU Institut für Sicherheitstechnik GmbH
An-Institut der TU Bergakademie Freiberg

[1] **EC-TYPE EXAMINATION CERTIFICATE**
(Translation)



- [2] Equipment and Protective System intended for use in Potentially explosive atmospheres, Directive 94/9/EC
- [3] EC-Type Examination Certificate Number: **IBExU03ATEX1011**
- [4] Equipment: Blank plug
SKINDICHT® BL-M-ATEX
- [5] Manufacturer: U. I. Lapp GmbH
- [6] Address: Schulze-Deitzsch-Straße 25
70565 Stuttgart
- [7] This equipment and any acceptable variation thereto are specified in the schedule to this EC-Type Examination Certificate.
- [8] IBExU Institut für Sicherheitstechnik GmbH, NOTIFIED BODY number 0637 in accordance with article 9 of the Council Directive 94/9/EC 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 intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential test report IB-03-3-199 of 10.04.2003.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 50014:1997/A1/A2, EN 50019:2000 and EN 50281-1-1:1998/A1.
- [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 under [17] in the schedule to this EC-Type Examination Certificate.
- [11] This EC-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this directive apply to the manufacture and supply of this equipment.
- [12] The marking of the equipment shall include the following:

II 2G EEx e II

II 1D IP 66/68

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7 - D-09599 Freiberg
Tel.: 00493731 3805-0 - Fax: 00493731 23650

Authorized for certifications Explosion protection

By order

(Dr. I. Lösch)

Schedule



- Seal -
(ID no. 0637)

Freiberg, 10.04.2003

Certificates without signature and seal are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

[13] **Schedule**

[14] **to the EC-TYPE EXAMINATION CERTIFICATE IBExU03ATEX1011**

[15] **Description of equipment**

The metric Blank plugs SKINDICHT® BL-M-ATEX serve for closing of holes in enclosures, which are planned for mounting cable entries. Die Blank plugs consist of brass and they are provided with an O-ring.

- Type series:

Type designation	Thread size
SKINDICHT® BL-M 12-ATEX ***	M12 x 1,5
SKINDICHT® BL-M 16-ATEX ***	M16 x 1,5
SKINDICHT® BL-M 20-ATEX ***	M20 x 1,5
SKINDICHT® BL-M 25-ATEX ***	M25 x 1,5
SKINDICHT® BL-M 32-ATEX ***	M32 x 1,5
SKINDICHT® BL-M 40-ATEX ***	M40 x 1,5
SKINDICHT® BL-M 50-ATEX ***	M50 x 1,5
SKINDICHT® BL-M 63-ATEX ***	M63 x 1,5

*** = Manufacturer's Indications without special meaning for the explosion protection (i. e. longer connection threads)

- Ambient temperature range: -30 °C up to +90 °C
- Degree of protection according to EN 60529: IP 66 / IP 68 (5 bar)

[16] **Test report**

The examination and test results are recorded in confidential test report IB-03-3-199 of 10.04.2003. The test documents are component of the test report and listed there.

Summary:

The Blank plugs SKINDICHT® BL-M-ATEX fulfil the requirements of explosion protection for equipment group II, equipment category 2G, type of protection „Increased safety“ and equipment category 1D by application of the type of protection „Protected by enclosure“.

Safety instructions

The operating temperature on the Blank plugs must not exceed 90 °C.

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

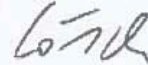
None

[18] **Essential Health and Safety Requirements**

Met by compliance of standards (see [9]).

By order

Freiberg, 10.04.2003



(Dr. Lösch)