ELMESS

**Betriebsanleitung / Operating manual**
**Heizung für Gase Typ / Heater for gases type DHG11 ...**

Übersetzung, Original Deutsch; Translation, original German

The operating manual consists of

- Description
- Description for pressure equipment
  together with EC declaration of conformity if applicable
- Specification (Data sheet)
- Dimension sheet
- Electrical diagram
- EC declaration of conformity

## Description

Design and application

The heater is manufactured in explosion proof design for operation in category ⟨Ex⟩ II 2 G.

The technical data and type of protection and temperature class are included in the specification, in part on the nameplate, connection diagram and dimensional diagram.

The heater is equipped with a connection box which is sufficiently dimensioned for the electrical connection. This connection box serves also for connecting the incorporated temperature sensors or handling of capillary probes with switching contact.

The heater serves for heating gas within category 2 G.

The heater must be suitable for the specified application and may only be used in a manner appropriate to its purpose.

**It is only permitted to operate the heater in conjunction with a safety system acknowledged to be reliable in its function.**

The safety system must consist of at least one temperature limiting system, which all have been successfully acknowledged to be reliable.

Capillary temperature probes with a switching contact installed by the manufacturer or temperature sensors, together with the delivered thermal cut-out type eB*6*** have been inspected and approved according to directive 94/9 EC. All monitoring devices must be fitted with other protective devices, e.g. fuses and relays, contactors, RCD's to form a complete safety system. Should one or more of the safety devices be activated, the heater must, without exception, be immediately physically disconnected from the electrical mains supply.

The heater can also be fitted with other temperature limiters, regulators or temperature sensors. If these devices are also to be used for monitoring purposes, they should be integrated into the safety system.

Conditions for safe operation of the heater

- It should be ensured that the heat emission is evenly distributed and not obstructed during operation. The heating element must be directly covered with medium.
- If the heater operates with flow, a laminar flow is necessary and all heated surfaces and temperature sensors must have equal heat dissipation.
- The heater may only be operated in the specified mounting position and under the specified ambient temperature conditions.
- The surface temperature of the system to be heated must not exceed the maximum temperature of the given temperature class.
- The individual thermal test to determine the temperature class is to be carried out by the manufacturer.
- The temperature sensors, which are necessary for explosion protection, must positioned so, that phase failure in three-phase systems will be accounted for.
- The technical safety restrictions for heating up of closed systems are to be especially observed.
- Only the manufacturer is permitted to carry out repairs on the flame-proof gaps or openings.

**Betriebsanleitung / Operating manual**
**Heizung für Gase Typ / Heater for gases type DHG11 ...**

Fitting and installation

If the heater is not to be immediately fitted and operated, the storage instructions included with every heater delivery must be observed. The heater must be protected from damp entering the device in particular.

Material appropriate to the category is to be used when fitting and operating the device.

Applicable regulations, e.g. DIN IEC 60364 must be observed when fitting, installing and operating the device. Following standards IEC/EN 60079-14, IEC/EN 60079-17 and in Europe the EC directive 1999/92/EC must apply. Furthermore, local regulations, such as the explosion protection regulations of the Chemical Industry Employer's Liability Insurance Association and the Ordinance on Industrial Safety and Health for Germany, have to be observed.

The erection of the heater is to be done in accordance to the dimensional drawing and protected against solar radiation. Especially the mounting position has to be considered. Flanges, respectively in- and outlet nozzles must be mounted with suitable bolts, nuts and sealings without any kind of stress, under observing the flow direction in the piping system on site.

The electrical installation must be done on terminal box by using fix connected wiring, which meets harmonised standards, with a cross-section appropriate to the power rating on the matching terminals and concerning a 12 mm air distance in between. The heater must be protected with an appropriate back-up fuse.

For each cable leading in there is an earth conductor, which must be connected.

Cable entries respectively open holes, which are not used, must be safely shut in accordance to IEC/EN 60079.

A potential equalisation terminal of type of protection Ex e is available on the exterior of each casing, to which the heater must be connected with the external potential equalisation source.

Adjustments

The operating points of the temperature limiting system are fixed in place and are protected against tampering of any kind.

The setpoint for the temperature limiting system relevant for the temperature class is specified on the device. Manufacturer's setting, adjusted during the thermal test, must not be changed.

In the event of a malfunction, e.g. if the temperature class is reached, the temperature limiting system shuts off. The temperature limiting system can be reset using the "Reset" button. The heater must cool off by at least 20 K before this is done and the reason for the shut-down must be determined and remedied. The reset function can be done by a short push of the Reset button inside the heater connection box or at the separately delivered Thermal cut-out.

The operating value of the temperature regulator can be selected depending on the scale. It should, however, be at least 10 K below the operating point of the temperature limiting system. It is perfectly normal for the regulator to shut down for a brief moment if the heater is being heated up. The temperature regulator can be adjusted inside the heater connection box or at the separately delivered Thermal cut-out

Maintenance, malfunctions

The heater must be maintained in accordance with IEC/EN 60079-17.

The efficiency of the protecting system must be examined when commissioning the device and thereafter as part of regular equipment inspections, but no less frequently than every three years.

Externally visible damage or corrosion of components of the flame proof enclosure or of connector components must be repaired immediately using genuine spare parts by the manufacturer, ELMESS-Thermosystemtechnik GmbH & Co. KG, Nordallee 1, D-29525 Uelzen, Germany, or by specialists authorised to act on behalf of the manufacturer.

# Raumheizgerät Spezifikation

ELMESS THERMO SYSTEM TECHNIK

| | | | |
|---|---|---|---|
| Kunde | MB-Anlagenbau GmbH | Datum | 28.04.2014 **Rev00** |
| Fabrik Nr. | 822387/001...003 | Anzahl | 3 |
| Auftrag Nr. / Position | 822387-0010 | Kunden Angaben | |
| Artikel Nr. | 50017098 | | |
| Bezeichnung | Ex-Raumheizgerät | Typ | **DHG11B3/R1-3-T3** |

| | | |
|---|---|---|
| **1 Schutzart IEC/EN 60529** | IP 66 | |
| **2 Ex-Kennzeichnung Zündschutzart IEC/EN 60079** | (Ex) II 2 G Ex de IIC T3 | |
| **IEC/EN 61241-0** | ----- | |
| EG-Baumusterprüfbescheinigung, IECEx Zertifikat | PTB 08 ATEX 1040 X | |
| EG Konformitätserklärung | ELM 08-035 | |
| **3 Elektrische Daten und Anschluss** | | |
| Bemessungsleistung | 3,0 kW | |
| Bemessungsspannung | 400 V 3/PE 50/60 Hz | |
| Bemessungsstrom / Vorsicherung | 4,3 A 10 A | |
| spezifische Oberflächenbelastung | 0,28 W/cm² | |
| Steuerstromkreis | max. 10 A; 230 V 1/N/PE 50/60 Hz | |
| Anschlussschaltplan | 16-1478-40 | |
| Anschlussquerschnitt Laststromkreis | 6/4 mm² | |
| Anschlussquerschnitt Steuerstromkreis | max. 6/4 mm² | |
| Kabeleinführung Laststromkreis / Material | 1 x M25x1,5; für Kabel-ø 7...17 mm / PA | |
| Kabeleinführung Steuerstromkreis / Material | 2 x M25x1,5; für Kabel-ø 7...17 mm / PA | |
| **4 Schutzsystem** | | |
| Temperatur Begrenzer B1 | TB = T3 - wirksam auf Heizelementoberfläche | |
| **weitere Überwachungsgeräte bzw. Sensoren** | | |
| Temperatur Wächter, Regler B2 | TR = 0...190 °C - wirksam auf Heizelementoberfläche - Skala 0...10 | |
| Temperatur Wächter, Regler | ----- | |
| Isolationsfehlerüberwachung | erforderlich | |
| **5 Abmessungen** | | |
| Massblatt / Zeichnung | K-822387 | |
| Länge x Breite x Höhe | 2025 x 160 x 230 mm | |
| Länge Berührungsschutzkorb | 1790 mm | |
| Länge Heizbündel | 1725 mm | |
| Temperaturabfall Länge Lt | ----- | |
| Heizbündel Durchmesser | 120 mm | |
| Scheibenabstand | 170 / 180 mm | |
| Querschnitt Berührungsschutzkorb | 160 x 160 mm | |
| Befestigung L x H | 1765 x 105 mm | |
| **6 Werkstoffe / Oberfläche** | | |
| Heizbündel | CrNi 1.4541 | metallisch blank |
| Rippenscheiben | CrNi 1.4301 | metallisch blank |
| Berührungsschutzkorb, Konsolen | Stahlblech | lackiert |
| Anschlussgehäuse | EN-GJL-250 (GG25) | lackiert |
| **7 Betriebs- und Auslegungsdaten** | | |
| Medium | Raumluft | |
| Max. Oberflächentemperatur | 200 °C | |
| Umgebungstemperatur | -20 °C ... +40 °C | |
| Aufstellung, Einbaulage | entspr. Zeichnung - Nr. : K-822387<br>Kabeleinführungen rechts; H 90, V 90 | |
| **8 Auslegung / Code** | | |
| Maximal zulässiger Betriebsüberdruck (PS) | ----- | |
| Zulässige Temperatur min. / max. (TS) | ----- | |
| Fluidgruppe / Diagramm | ----- | |
| Kategorie / Modul | ----- | |
| Abnahme / Zeugnis / Protokoll | ----- / ----- / ----- | |
| **9 Dokumentation** | deutsch / englisch | |
| Betriebsanleitung | DHG11 ... | |
| **10 Bemerkungen** | | |
| | | |
| | | |
| **11 Interne Angaben** | | |
| RHK: Anzahl Form; Schaltung; Typ | 6 DH; R2Y; NR 700V 15G / 2000W / 230V | |
| Lot / Schweißzusatz / RHK-ø | Fontargen AF 314 D / 1.5424 - 1.4576 / 8,5 | |
| Projektleiter / Sachbearbeiter | Klaus Konradt / Go. | |

# Space Heater

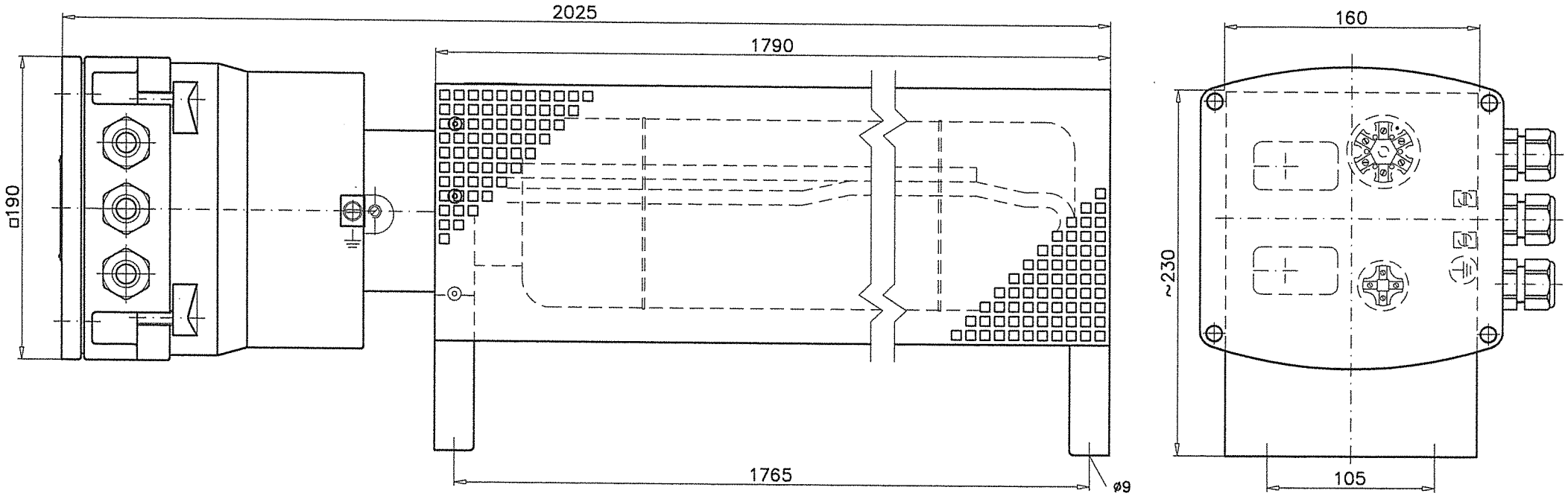
# Specification

Translation, Original German

ELMESS THERMO SYSTEM TECHNIK

| | | | |
|---|---|---|---|
| Client | MB-Anlagenbau GmbH | Date | 28.04.2014 **Rev00** |
| Fabric No. | 822387/001...003 | Piece | 3 |
| Order No. / Position | 822387-0010 | Client details | |
| Article No. | 50017098 | | |
| Name | Ex Space Heater | Type | **DHG11B3/R1-3-T3** |

| | |
|---|---|
| **1 Degree of Protection IEC/EN 60529** | IP 66 |
| **2 Ex Marking and Type of Protection IEC/EN 60079** | (Ex) II 2 G Ex de IIC T3 |
| **IEC/EN 61241-0** | ----- |
| EC Type Examination Certificate, IECEx Certificate | PTB 08 ATEX 1040 X |
| EC Declaration of Conformity | ELM 08-035 |
| **3 Electrical data and connection** | |
| Rated power | 3,0 kW |
| Rated voltage | 400 V 3/PE 50/60 Hz |
| Rated current / back up fuse | 4,3 A 10 A |
| Specific surface load | 0,28 W/cm² |
| Control circuit | max. 10 A; 230 V 1/N/PE 50/60 Hz |
| Connection diagramm | 16-1478-40 |
| Connection cross section power circuit | 6/4 mm² |
| Connection cross section control circuit | max. 6/4 mm² |
| Cable entry power circuit / material | 1 piece M25x1,5 for cable diameter 7...17 mm / PA |
| Cable entry control circuit / material | 2 piece M25x1,5 for cable diameter 7...17 mm / PA |
| **4 Protection system** | |
| Temperature limiter B1 | TB = T3 - effective on surface heating elements |
| **additional monitoring devices or sensors** | |
| Temperature monitor, regulators B2 | TR = 0...190 °C - effective on surface heating elements - scale 0...10 |
| Temperature monitor, regulators | ----- |
| Earth leakage protection device | necessary |
| **5 Dimensions** | |
| Dimension sheet / drawing | K-822387 |
| Length x Width x Hight | 2025 x 160 x 230 mm |
| Length protective cage | 1790 mm |
| Length heating bundle | 1725 mm |
| Temperature reduction length Lt | ----- |
| Heating sheath diameter | 120 mm |
| Distance of fins | 170 / 180 mm |
| Dimensions protection cage | 160 x 160 mm |
| Fixing points Length x Hight | 1765 x 105 mm |
| **6 Material & Surface** | |
| Heating elements | AISI 321 - (CrNi 1.4541) metallic bright |
| Finned heater | AISI 304 - (CrNi 1.4301) metallic bright |
| Protection cage / Mounting feet | C-Steel - (S235JR) varnished |
| Connection casing | Cast iron - (EN-GJL-250) varnished |
| **7 Operation and design data** | |
| Medium | Space air |
| Max. surface temperature | 200 °C |
| Ambient temperature | -20 °C ... +40 °C |
| Mounting position | according drawing - no. : K-822387<br>cable glands at right side; H 90, V 90 |
| **8 Calculation / code** | |
| Maximal operating pressure | ----- |
| Allowable temperature min. / max. | ----- |
| Fluid group / diagramm | ----- |
| Categorie / modul | ----- |
| Inspection / certificate / report | ----- / ----- / ----- |
| **9 Documentation** | german / english |
| Operation manual | DHG11 ... |
| **10 Remarks** | |
| | |
| | |
| **11 Internal remarks** | |
| Heating elements: pieces; shape; wiring; type | 6 DH; R2Y; NR 700V 15G / 2000W / 230V |
| Solder / welding filler / heating element diameter | Fontargen AF 314 D / 1.5424 - 1.4576 / 8,5 |
| In charge / Project team | Klaus Konradt / Go. |




- waagerechte Bodenmontage
  Kabeleinführungen rechts
- horizontal floor mounting
  cable glands at right side

12. MRZ. 2014 Go.

Maße ohne Toleranzangabe nach DIN ISO 2768-mK für Einzelteile oder DIN 28005 für Behälter

# Ex-Raumheizgerät/Ex Space Heater

DHG11B3/R1-3-T3

Maßstab 1:2,5 (A3)

ELMESS THERMO SYSTEM TECHNIK Nordallee 1 D - 29525 Uelzen

| 2014 | Tag | Name |
|---|---|---|
| Gezeich. | 10.03. | Bunge |
| Geprüft | 10.03. | |
| Ex-Schutz | ... | |
| Schweißtechn. | ... | |

Zeichn.-Nr. K-822387 REV 00

Artikelnr.: 50017096 | Ausgabe: 10.03.2014 SB

EGB: PTB 08 ATEX 1040 X | PrüfZeichn.: ...

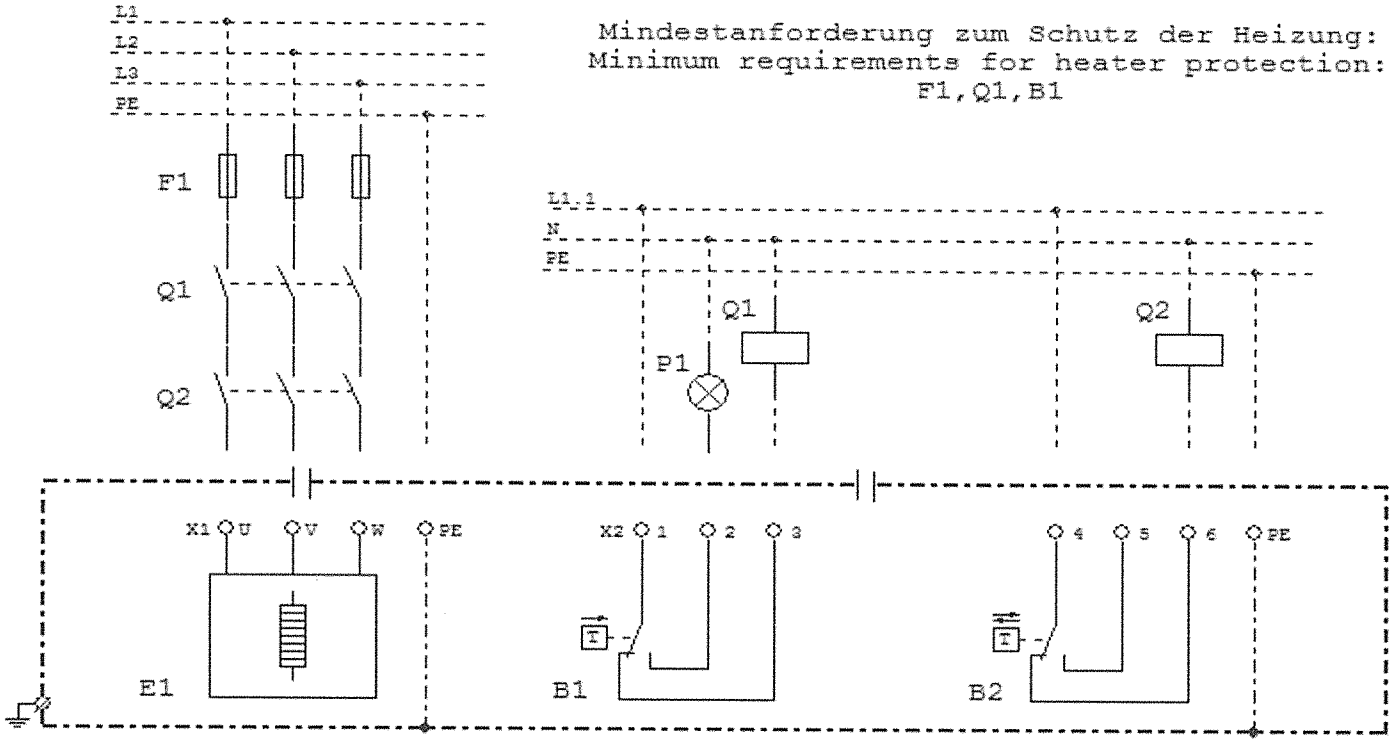


CAD\22\Auftrag\50017096

# Elektrische Schaltung Heizung
# Electrical diagram heater

ELMESS THERMO SYSTEM TECHNIK

| | | | |
|---|---|---|---|
| Typ / Type | DHG11B3/R1-3-T3 | | |
| Bemessungsleistung / Rated power | 3,0 kW | Auftrag Nr. / Order No. | 822387-0010 |
| Bemessungsspannung / Rated voltage | 400 V 3/PE 50/60 Hz | Kunde / Customer | MB-Anlagenbau GmbH |
| Bemessungsstrom / Rated current; | 4,3 A | Schaltplan-Nr. / Diagram No. | 16-1478-40 |
| Vorsicherung / Back up fuse | 10 A | | |




Ex-Raumheizgerät

Ex Space Heater

TB = T3 - wirksam auf Heizelementoberfläche

TB = T3 - effective on surface heating elements

TR = 0...190 °C - wirksam auf Heizelementoberfläche - Skala 0...10

TR = 0...190 °C - effective on surface heating elements - scale 0...10

ELMESS

**EG Konformitätserklärung** (DE) **ELM 08 - 035**
***EC Declaration of Conformity*** *(EN)* **Seite /*Page* 1 / 1**

94/9/EG / EC - Modul C

Erklärung von / *Declaration of*

ELMESS-Thermosystemtechnik GmbH & Co. KG
Nordallee 1
29525 Uelzen, Deutschland, *Germany*

www.elmess.de

Hiermit wird - in Übereinstimmung mit Anhang VI der Richtlinie 94/9/EG sowie mit der Richtlinie 2006/95/EG - erklärt, dass das elektrische Betriebsmittel / *We herewith declare that - in agreement with annex VI of directive 94/9/EC as well as with directive 2006/95/EC - the electrical apparatus*

Heizung für Gas / Luft / *Heater for gas / air*

Typ / type **DHG...-...-T.**
(Erzeugnis, Typ, Beschreibung / *Good, type, description)*

in Übereinstimmung mit den Anforderungen gemäß Europäischer Normen entwickelt, hergestellt und geprüft worden ist / *has been designed, manufactured and tested in agreement according to European Standards.*

Diese Erklärung gründet sich auf Übereinstimmung mit / *This Declaration is based on agreement with*

EN 60079-0:2006, EN 60079-1:2007, EN 60079-7:2007, EN61241-0:2006, EN61241-1:2004, EN 60519-2:2007, EN 60529:2000
von / *of* CENELEC
(Europäische Normen oder Harmonisierungs-Dokumente von CENELEC / *European Standards or Harmonization Documents of CENELEC )*

Diese Erklärung gründet sich auf Übereinstimmung mit / *This Declaration is based on agreement with*

EG-Baumusterprüfbescheinigung Nr. / *EC-Type-Examination Certificate N°* PTB 08 ATEX 1040 X
(Europäische benannte Prüfstelle Nr. / *European notified body No.:* 0102*)*

An das obengenannte Gerät wurde das Kennzeichen CE 0044 angebracht. /*The a.m. apparatus has been labelled with the mark CE 0044.*

ELMESS-Thermosystemtechnik GmbH & Co.KG

ppa. Reinhard Wagner

i.V. Lutz Mühe

D-29525 Uelzen, 22.05.2012

Anerkennung des Qualitätssicherungssystems / *Production Quality Assessment Notification:* TüV Cert: 0044