VFL-Ex, VTL-Ex, VRA-Ex

VEAB Heat Tech AB

Art.nr: 172565-08

GB

1.0 General

1.1 All work is to be done by qualified and authorised personnel.

1.2 Handle the equipment carefully.

1.3 The heater is to be stored in dry conditions, relative humidity <55%, temperature >15°C.

1.4 The ambient temperature for the heater when in use is min. -20°C / max. +40°C.

1.5 Before installing the unit, a visual check for transport damages must be made.

1.6 The heater must be secured to the ventilation duct.

1.7 If any changes are made to the product without the consent of VEAB Heat Tech, all the certificates of approval becomes invalid.

2.0 Fitting

2.1 The air velocity through the heater must be at least 2.5m/s and the output temperature must not exceed 40°C.

2.2 Capillary tubes to the temperature limiters are fitted on the heating elements of the power step 1.

2.3 When heat is required, heating elements for power step 1 shall always be energized.

2.4 The heater may be mounted in a horizontal or a vertical duct, the junction box is to be placed on the side or upwards.

2.5 The minimum distance from or to the nearest duct bend, valve, filter, etc., should correspond with the diagonal dimension of the heater i.e. the from corner to corner in the duct part of the heater. If this is not the case there is a risk that the air flow through the heater will be uneven, which may activate the temperature limiter.

2.6 The air flow direction through the heater must go in the same direction as the arrow on the cover of the heater. The temperature limiter and safety thermostats shall always be placed last in the air flow direction.

2.7 The settings for the surface-mounted temperature limiter with manual resets must never be changed.
For the T3 temperature class, the temperature limiter is factory set to 150°C.

2.8 The setting for the thermostat with automatically reset must never be higher than 60°C.

3.0 Electrical connections

3.1 Installation has to meet the requirements of any approved standard.
1. Open the junction box
2. Connect the supply cable to the terminals in each step, terminal earth and terminal 1-6 for thermal protection.
Optional: Heater equipped with anti-condensation heater, connect the supply cable to the terminals 7 and 8.

Max cross-sectional area in terminal block	
Terminal block	Max cross-sectional area
1492-J4 & JG4	4mm²
1492-J6 & JG6	6mm²
1492-J10 & JG10	10mm²
1492-J16 & JG16	16mm²
1492-J35 & JG35	35mm²

3. Close the junction box.

3.2 The duct heater must be installed so that there is an interlock between the temperature limiters and the thermostat that are fitted to the heater, as well as the fan/air flow that flows through the duct heater. The power supply to the elements should consequently not be switched on unless the associated fan starts or if the temperature limiter has tripped. See wiring example.
When heat is required, heating elements for power step 1 shall always be energized. The temperature limiters are mounted on power step number 1. If the heater has more than one power step, power step number 1 shall always be the first to be energized when the heater is required for operation, and the last to be switched off when the power is turned off.

3.3 A multi-pole switch shall be installed in the fixed installation.

3.4 The control equipment shall have a separate sensor which automatically limits the temperature of the outlet air from the heater to 40°C.

3.5 The heater's data for voltage, power and temperature limiter is stated on the wiring diagram that is on the inside of the cover to the duct heater as well as on the specification plate on the outside of the cover.

3.6 Check the torque for all terminal blocks before using the heater. The torques are specified on the wiring diagram. This must also be done, at least once, after the heater has been in use for 6 months. This must also be done in connection with other periodic maintenance on the equipment.

3.7 The heater must be connected to the mains using a permanent cable, and be connected to control equipment that is approved for the risk area in question.

3.8 Use only cable connections with IP66 protection, or higher, approved for Ex e or Ex d (not included).

3.9 The connector for external earth is placed closed to the terminal blocks. The connector for the external equi-potential is close to the cable entry points.

4.0 Maintenance and repairs

4.1 Make sure that there are no explosive gases in the area around the heater, before commencing and during any repairs and maintenance.

4.2 Follow any applicable regulations concerning work in explosive gas environments.

4.3 If there is a need for replacement of the components, those are to be ordered from VEAB Heat Tech AB.
The use of other components may affect the validity of the certifications.

4.4 The heater elements of a VFL-EX are mounted at the bottom of the junction box, and can be replaced without dismantling the frame from the duct system.

4.5 No specific maintenance is required except periodical maintenance and function tests. See also section 3.6.

5.0 Overheating/Resetting

The heater is equipped with temperature limiters and thermostat that is fail-safe, i.e. if the capillary tube should rupture, the safety circuits are automatically tripped. This safety function also means that the temperature limiter is sensitive to shocks during transport. Before the heater is used, perform a manual reset of the temperature limiter. See figure 1 below.

If the temperature limiter with manual reset has tripped during use, the following must be carried out:

5.1 Turn off the power supply.

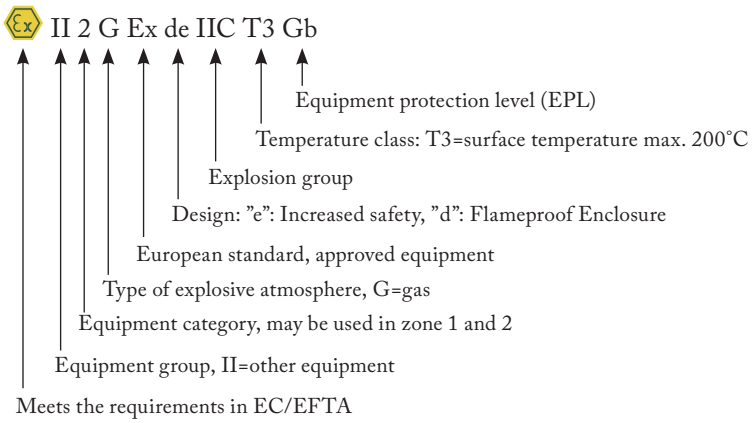
5.2 Do a careful search for the cause that has tripped the temperature limiter, and correct it.

5.3 When the cause has been corrected, reset the temperature limiter in the junction box of the heater.

6.0 Markings and approvals

6.1 VFL-Ex, VTL-Ex, VRA-Ex

6.2



6.3 Intertek Notified Body number: 0359
Report number: ITS10ATEX36956X

7.0 Wiring example

see appendix 1, page 11

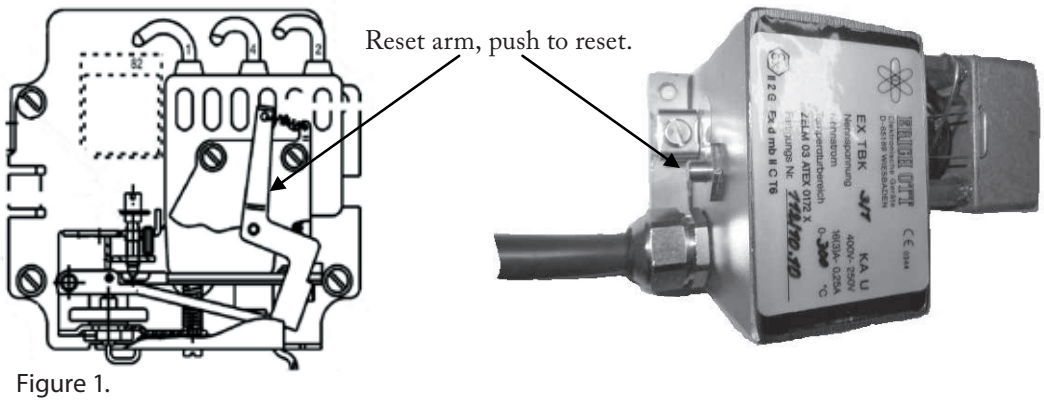


Figure 1.

VIKTIGT (säker användning)

- Temperaturbegränsarens givare är monterad med en fjäder runt värmeelementet.
  Givaren är placerad på baksidan av värmeelementet sett i luftströmmen. Givaren mäter elementets yttemperatur.
- Termostatens givare är monterad i ett bulbrör. Givaren mäter utgående lufttemperatur.
- Värmeelementen i effektsteg 1 skall alltid placeras sist i luftströmmen.
- När värmebehov finns skall värmeelementen i effektsteg 1 alltid vara inkopplade.

IMPORTANT (safe use)

- The temperature limiter capilary tub are fixed with a spring coil around the heating element.
  Located at heating elements backside in air direction. Monitoring heating element temperature.
- The thermostat are fixed in a tube. Monitoring outlet air temperature.
- The heating elements in power step 1 shall always be placed last in the air flow direction.
- When heat is required, heating elements in power step 1 shall always be energized.

WICHTIG (sichere Verwendung)

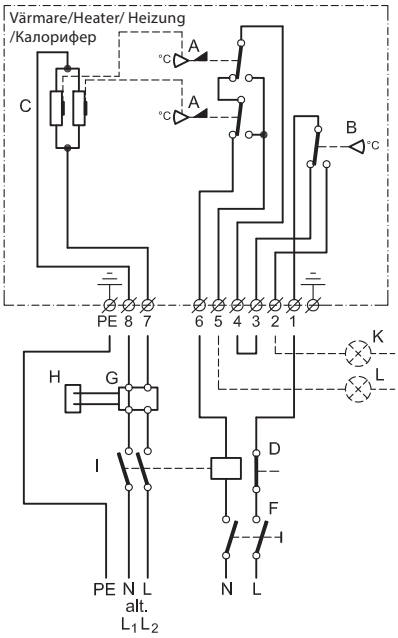
- Das Kapillarrohr des Temperaturbegrenzers wird mit einer Spiralfeder um das Heizelement fixiert.
  Befindlich an den rückseitigen Heizelementen in Luftrichtung. Überwachung der Heizelementtemperatur.
- Der Thermostat ist in einem Rohr befestigt. Überwachung der Austrittslufttemperatur.
- Die Heizelemente in Leistungsstufe 1 müssen immer zuletzt in Luftstromrichtung angeordnet werden.
- Wenn Heizleistung benötigt wird, müssen stets die Heizelemente in Leistungsstufe 1 mit Strom versorgt werden.

ВАЖНО (безопасная эксплуатация)

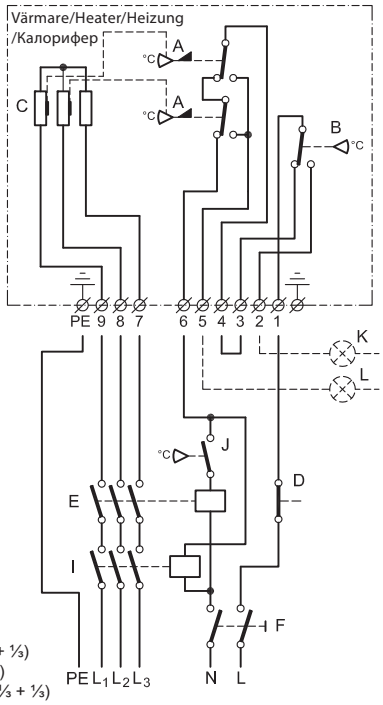
- Капиллярные трубки ограничителя температуры закреплены спиральной пружиной вокруг тепловыделяющего элемента.
- Размещён у задней стороны тепловыделяющего элемента в напавлении движения воздуха. Непрерывно следит за температурой тепловыделяющего элемента.
- Терморегулятор установлен в трубе. Непрерывно следит за температурой воздуха на выходе.
- Тепловыделяющие элементы ступени мощности 1 должны всегда располагаться последними в направлении воздушного потока.
- Когда требуется обогрев, тепловыделяющие элементы ступени мощности 1 должны всегда иметь энергопитание.

Bilaga 1/Appendix 1/Anhang 1/ Приложение

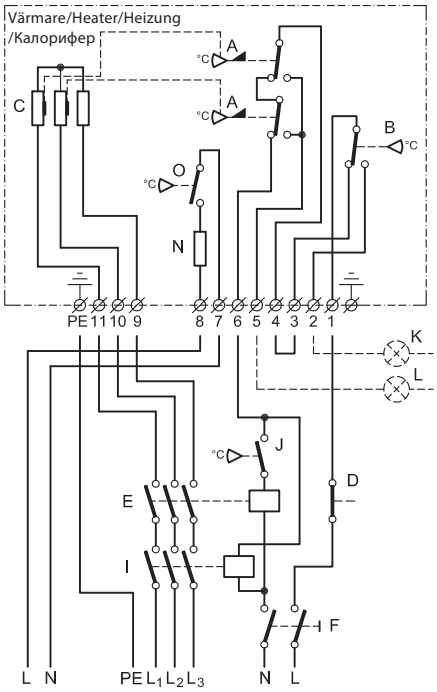
Inkopplingsexempel 1, 230V~ och 400V2~
Wiring example 1, 230V~ and 400V2~
Anschlussbeispiel 1, 230V~ und 400V2~
Пример подсоединения 1, 230В~ och 400В2~



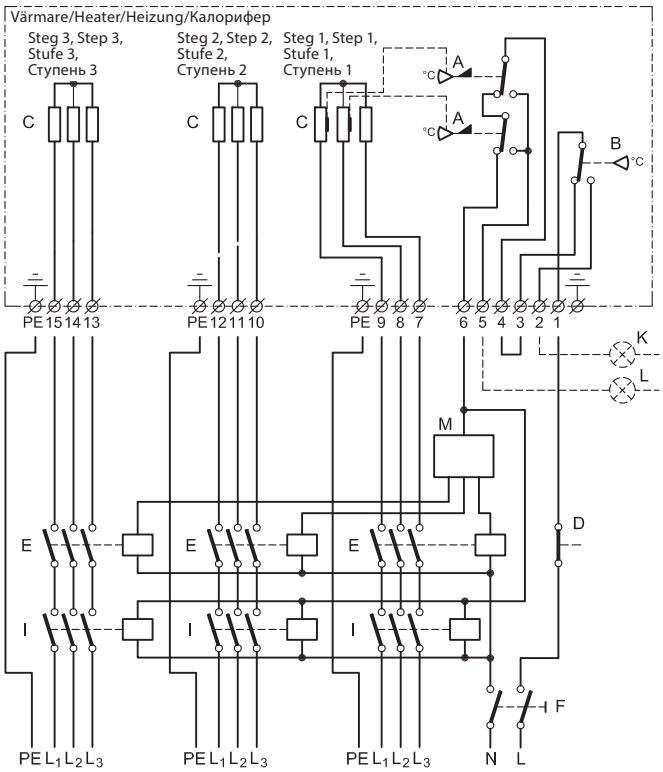
Inkopplingsexempel 2, Max 43 kW, 400V3~
Wiring example 2, Max. 43kW, 400V3~
Anschlussbeispiel 2, max. 43 kW, 400V3~
Пример подсоединения 2, Макс. 43кВт 400В3~



Inkopplingsexempel 2, Max 43 kW, 400V3~,
med ev. antikondensvärmare
Wiring example 2, Max. 43kW, 400V3~,
with optional anti-condensation heater
Anschlussbeispiel 2, max. 43 kW, 400V3~,
mit optionaler mit Antikondensationsheizung
Пример подсоединения 2, Макс. 43кВт 400В3~,
с противоконденсатным нагревателем



Inkopplingsexempel 4, Max 129kW, 400V3~, 3 steg (⅓+ ⅓+ ⅓)
Wiring example 4, Max. 129kW, 400V3~ , 3 step (⅓+ ⅓+ ⅓)
Anschlussbeispiel 4, max. 129 kW, 400V3~, 3 Stufen (⅓ + ⅓ + ⅓)
Пример подсоединения 4, Макс. 129кВт 400В3~, 3 Ступень (⅓+ ⅓+ ⅓)



54134-5

SE

A	2st temperaturbegränsare med manuell återställning som begränsar värmeelementens yttemperatur. Monterade på element i steg 1.	H	Givare
B	Termostat för begränsning av utgående temperatur.	I	Säkerhetskontator
C	Belastning	J	Termostat
D	Förregling	K	Hög utgående temperatur
E	Kontaktor	L	Utlösta temperaturbegränsare
F	Allpolig brytare	M	Regulator
G	Effektreglering	N	Termostatreglering
		O	Anti-kondensvärme, 50W

DE

A	2 Stk. Temperaturbegrenzer mit manueller Rückstellung, Überwachung der Oberflächentemperatur des Heizelements. Angebracht am Heizelement auf Stufe 1.	G	Leistungssteuerung
		H	Sensor
		I	Sicherheitsschütz
		J	Thermostat
B	Thermostat mit automatischer Rückstellung, Begrenzung der Austrittslufttemperatur.	K	Hohe Austrittslufttemperatur
		L	Ausgelöster Temperaturbegrenzer
C	Last	M	Regler
D	Sicherheitsverriegelung	N	Regelthermostat
E	Schütz	O	Antikondensationsheizung, 50 W
F	Mehrpoliger Schalter		

GB

A	2 pcs temperature limiter with manual reset, monitoring heating element surgace temperature. Fitted on the heating element on step 1.	G	Output control
		H	Sensor
		I	Safety contactor
B	Thermostat with automatic reset, limiting ourlet air temperature.	J	Thermostat
		K	High outlet air temperature
C	Load	L	Tripped temperature limiter
D	Interlocking	M	Regulator
E	Contactor	N	Regulating thermostat
F	Multi-pole switch	O	Anti-condensation heater, 50W

RU

A	2 ограничителя температуры с ручным возвратом в исходное состояние, ограничивающие температуру поверхности термоэлементов. Смонтированы на элементе ступени мощности 1.	G	Регулирование мощности.
		H	Датчик.
		I	Контактор безопасности.
		J	Регулятор температуры.
B	Регулятор для ограничения температуры воздуха на выходе.	K	Повышенная температура на выходе.
		L	Сработал ограничитель температуры.
C	Нагрузка.	M	Регулятор.
D	Блокировка.	N	Регулирование температуры.
E	Контактор.	O	Противоконденсатный нагреватель, 50 Вт.
F	Многополюсный переключатель.		

Godkännande

VEABs godkända kanalvärmare uppfyller kraven i ATEX-direktivet EC/EFTA.

Provning och certifiering är utförda av Intertek (NB 0359) enligt certifikat: ITS10ATEX36956X.

Tillämpade provningsstandarder:
IEC/EN 60529, IEC/EN 60079-0 och IEC/EN 60079-7.

Kanalvärmarna är också testade och godkända av Intertek SEMKO enligt:
LVD-direktivet: IEC/EN 60335-1, IEC/EN 60335-2-30 och SEMKO 111 FA1982
EMC-direktivet: IEC/EN 61000-6-2, IEC/EN 61000-6-3 och IEC/EN 61000-3-11

Approvals

The VEAB ATEX-approved duct heaters fulfill the requirements within EC/EFTA.

Tests and certifications have been performed by Intertek (notified body 0359) as per report: ITS10ATEX36956X.

Applied testing standards:
IEC/EN 60529, IEC/EN 60079-0 and IEC/EN 60079-7.

The duct heaters are also tested and approved by Intertek SEMKO according to:
LVD directive: IEC/EN 60335-1, IEC/EN 60335-2-30 and SEMKO 111 FA1982
EMC directive: IEC/EN 61000-6-2, IEC/EN 61000-6-3 and IEC/EN 61000-3-11

Zulassungen

ATEX-zugelassene Kanalheizregister von VEAB erfüllen die Anforderungen innerhalb der EG/EFTA.

Prüfungen und Zertifizierungen wurden von der Firma Intertek (benannte Stelle 0359) gemäß Bericht ITS10ATEX36956X durchgeführt.

Angewandte Prüfnormen:
IEC/EN 60529, IEC/EN 60079-0 und IEC/EN 60079-7.

Die Kanalheizregister werden auch von der Firma Intertek SEMKO geprüft und zugelassen nach:
LVD-Richtlinie: IEC/EN 60335-1, IEC/EN 60335-2-30 und SEMKO 111 FA1982
EMV-Richtlinie: IEC/EN 61000-6-2, IEC/EN 61000-6-3 und IEC/EN 61000-3-11

Одобрения

Канальные калориферы фирмы VEAB в исполнении ATEX отвечают требованиям в EC/EACT.

Испытания и сертификация выполнены лабораторией Intertek (нотифицированный орган сертификации 0359) согласно протоколу: ITS10ATEX36956X.

Стандарты на условия испытаний:
IEC/EN 60529, IEC/EN 60079-0 и IEC/EN 60079-7.

Канальные калориферы также испытаны и одобрены центром Intertek SEMKO согласно
директивам LVD: IEC/EN 60335-1, IEC/EN 60335-2-30 и SEMKO 111 FA1982
директивам EMC: IEC/EN 61000-6-2, IEC/EN 61000-6-3 и IEC/EN 61000-3-11

0359 CE Ex II 2 G Ex de IIC T3 Gb ITS 10 ATEX 36956X

TEST REPORT

IEC 60529: Edition 2.1, 2001-02

Degrees of protection provided by enclosures (IP Code)

Report reference No.	1301900
Compiled by (+ signature)	Hans Svensson
Approved by (+ signature)	Anders Waltersson
Date of issue	13 February 2013
Contents	10 pages

Testing laboratory

Name	Intertek Semko AB
Address	P.O. Box 1103, SE-164 22 Kista, Sweden
Testing location	as above
Test date	13 December 2012(dust), 8 February 2013 (water)

Client

Name	VEAB Heat Tech AB
Address	Box 265, SE-281 23 Hässleholm, Sweden

Test specification

Standard	IEC 60529: Edition 2.1, 2001-02
Specified IP-code	**IP66**
TRF date.	-

Equipment Under Test (EUT)

Type of test object	Enclosure
Trademark	VEAB
Model and/or type reference	VFL-EX
Article No	-
Manufacturer	VEAB Heat Tech AB
Rating(s)	400 V 3~ 50 Hz 8,7 A

Intertek Semko AB
Torshamnsgatan 43, Box 1103, SE-164 22 Kista, Sweden
Telephone +46 8 750 00 00, Fax +46 8 750 60 30
www.intertek.se
Registered in Sweden: No: SE556024059901, Registered office: As address

1. # EC-TYPE EXAMINATION CERTIFICATE

2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3. EC-Type Examination Certificate Number: **ITS10ATEX36956X**

4. Equipment or Protective System: **VFL-Ex, VTL-Ex & VRA-Ex**

5. Manufacturer: **VEAB HEAT TECH AB**

6. Address: Stattenavagen 50, 281 23 Hassleholm, Sweden

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

8. Intertek Testing and Certification Limited, notified body number 0359 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

   The examination and test results are recorded in confidential Intertek Report 09041188A1 dated January 2012.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN 60079-0:2009 & EN 60079-7:2007 except in respect of those requirements referred to at item 18 of the Schedule.

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 and construction of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12. The marking of the equipment or protective system shall include the following:-

    Ex II 2 G Ex de IIC T3 Gb

P Moss
Certification Officer
January 2012

Intertek Testing & Certification Limited
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Tel: + 44 (0)1372 370900 Fax: +44 (0)1372 370977
http://www.intertek.com
Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

13. SCHEDULE

14 EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX36956X

15. Description of Equipment or Protective System

The VFL-Ex, VTL-Ex & VRA-Ex enclosures consist of a hinged enclosure and duct which varies from KB = 200mm KH = 200mm KD = 270mm to KB=3000mm x KH = 3000mm KD = 2000mm.
The IP 64 enclosure is manufactured from stainless steel and is used to house suitably certified Ex e terminals and Ex d temperature control, anti condensation heater including thermostat. In addition the heater elements are partly housed inside the enclosure and electrical connections are made here.
These elements protrude through the enclosure wall into the air flow.
Both internal and external earthing is provided.

16. Report Number:

Intertek Report 09041188A1 dated January 2012.

17. CONDITIONS OF CERTIFICATION:

(a). Special Conditions for safe use

- All power supplies must be fed via an interlock as indicated in the wiring diagrams of the manual.
- The duct heater must never be mounted with the enclosure placed at the bottom
- The maximum surface load on the heating elements is limited to 1.0W/cm.
- The manufacturers operating and maintenance instructions shall always be followed.
- Temperatures could exceed 70°C at the cable gland or 80°C at the branching point, suitably rated cable must be selected.
- No batteries or cells are to be fitted inside the enclosure.
- Heating elements shall be protected from mechanical impact.
- Additional protection as per Annex D of EN 60079-7:2007 shall be provided.

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13. SCHEDULE

14 EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX36956X
(b). Conditions For Use (Routine Tests)

A routine dielectric strength test in accordance with clause 6.1 and clause 7.1 of EN 60079-7:2007 shall be carried out between the case and enclosure terminals at a test voltage of:

(1000 + 2Un) * 1.2 Vr.m.s, where Un is the rated voltage for a period of not less than 100 ms.

The tests shall be recorded.

18. Essential Health and Safety Requirements (EHSR's)

The relevant EHSR's have been identified and assessed in Intertek Report 09041188A1 dated January 2012.

19. Drawings and Documents

Number	Title	Issue	Date
55323	Heater VFL-Ex, VTL-Ex & VRA-Ex Type lable	3	120105
54134	EX heater Wiring example	4	110912
54299	Duct heater ATEX approved Electrical connection Heating element	3	2011-10-12
54741	Duct Heater VFL-Ex 0359 CE Ex II 2 G Ex de IIC T3 Gb General drawing	6	2012-01-23
54742	Duct Heater VTL-Ex 0359 CE Ex II 2 G Ex de IIC T3 Gb General drawing	6	2012-01-23
54743	Duct Heater VRA-Ex 0359 CE Ex II 2 G Ex de IIC T3 Gb General drawing	6	2012-01-23
55006	Duct Heater Ex Junction Box General drawing	4	2011-12-19
55223	Duct Heater Ex Sealing profile industrilas P/N 427051	1	111017
55224	Duct heater Ex WARNING LABLE P/N 171642-03	2	120123
55478	Duct heater Ex Resistance heating elements (Ω) at 20°C	1	2012-01-25

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Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

Intertek

1. SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3. Supplementary EC-Type Examination Certificate Number: **ITS10ATEX36956X\1**

4. Equipment or Protective System: **VFL-Ex, VTL-Ex & VRA-Ex**

5. Manufacturer: **VEAB HEAT TECH AB**

6. Address: Stattenavagen 50, 281 23 Hassleholm, Sweden

7. This supplementary certificate extends EC-Type Examination Certificate Number **ITS10ATEX36956X** to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having variations specified in the Schedule attached to this certificate and the documents therein referred to.

   Intertek Report 09041188A1

   This Supplementary Certificate shall be held with the original Certificate

   ITS10ATEX36956X Dated January 2012

P Moss
Certification Officer
17th September 2012

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Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE NUMBER: ITS10ATEX36956X\1

VARIATION ONE

Description of the Variation to the Equipment or Protective System.

To permit the following change:

Manufacturer released evidence that made it clear if the temperature sensors were fitted in the last bank of heater elements, which were also the first to be energized then monitoring of other heater elements was not required. If the temperature was exceeded power to all heater elements would be removed. This therefore allowed a reduction of over temperature sensors from 2 per power step (in original certification) to 2 per duct heater.

Report No.

Intertek Report Ref: 09041188A1

CONDITIONS OF CERTIFICATION

(a) Special Conditions for Safe Use:

In addition to the original certificate the following are required.

- The two over temperature sensors shall be fitted to power step 1
- Power step 1 shall be the first to be energized when required for operation.
- Two over temperature sensors shall be fitted in the last row of the air flow direction (as shown below)

(b) Conditions for Use (Routine Tests):

See original certificate.

Essential Health and Safety Requirements

See original certificate

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Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE NUMBER: ITS10ATEX36956X\1

DRAWINGS

Number	Issue	Date	Description
55689	2	120917	Duct Heater EX placing of temperature controller Bulb
54134	5	120917	Ex heater wiring example

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NB: We reserve us from typographical errors and the right to make changes and improvements to the contents of this manual without prior notice.

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