

# UK-TYPE EXAMINATION CERTIFICATE

Product or Protective Systems Intended for Use in Potentially Explosive Atmospheres

UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

- UK-Type Examination Certificate Number:** ITS22UKEX0507X      **Issue 00**
- Product:** Liquid, Gas or Air Immersion Heater and Temperature Sensors – FP and RFA
- Manufacturer:** EXHEAT Ltd
- Address:** Threxton Road Ind Estate, Watton, Thetford, Norfolk, IP25 6NG, UK
- This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- Intertek Testing and Certification Limited, Approved Body number 0359, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. The examination and test results are recorded in the confidential report 103867041CHE-001 dated 14<sup>th</sup> September 2023.
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-7:2015+A1:2018 and EN 60079-31:2014 except in respect of those requirements referred to within item 14 of the Schedule.
- If the sign “X” is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.
- This UK-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- The marking of the product shall include the following:

II 2 G/D

**FP:**

Ex db eb\* IIC T6...T1 Gb

Ex tb IIIC T85°C...T450°C Db

\* Ex eb only when Ex eb component approved enclosure utilised).

**RFA:**

Ex db IIC T6...T1 Gb

Ex tb IIIC T85°C...T450°C Db

-60°C ≤ Ta ≤ +60°C



**Certification Officer:** \_\_\_\_\_

R J Tunncliffe

**Date:** \_\_\_\_\_

18th September 2023

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Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

## SCHEDULE:

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### 11. Description of Product or Protective System

#### Type FP:

This is an immersion heater for liquid, gas and solid application.

It is mainly composed of a terminal box and heating elements with temperature sensor and/or thermostat for overtemperature protection.

#### Terminal Box:

The heater comprises a cylindrical enclosure having a threaded detachable cover or a welded base or flange, all made of stainless steel, coated mild steel. The cover is secured by a locking screw. Alternative arrangement allows a stand-off version of terminal box. Another alternatively arrangement allows a dummy flange.

Arrangement allows the assembly of a second terminal box on the main terminal box. This Terminal box allows connection for temperature sensor and/or temperature transmitter. This auxiliary terminal box can be of protection:

- Ex e (see certificate Annex for permitted Ex e enclosures)
- Ex d (FP type covered by this certificate)
- Or any terminal box with minimum IP20 when only IS transmitters or simple apparatus as part of an I.S. circuit are utilised.

#### Heating elements:

Heating elements enter the base of the enclosure by compression fitting or weld/braze.

#### Connections:

The enclosure contains terminal assemblies mounted on brackets, to provide connection to the element ends. Anti-condensation heaters may be optionally within the enclosure; these are wired in accordance with the wiring diagram mentioned in the manufacturer documentation.

#### Temperature control:

To maintain the temperature classification, overtemperature protection thermostats, RTDs or thermocouples are fitted, the sensing elements of which are fitted inside the heated vessel and inside the enclosure. Optional additional temperature controls may be fitted.

#### Variation models:

FP-G: model allows the overtemperature protection to be fitted in the process connection flange edge instead of inside the heated vessel.

FP-B: model without overtemperature protection of the enclosure based on stabilised design of the enclosure.

FP-H: model allows the area inside the vessel to be hazardous.

FP-BH: combination of models FP-B & FP-H.

FP-T: model for thermostatic control applications containing only a thermostat or RTD or thermocouple with capillary housed in a pocket.

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Temperature class:

Stand Off version:

T CLASS	MINIMUM STANDOFF 'X'	FLANGE/PROCESS THERMOSTAT SET POINT (MAX.)	T'BOX THERMOSTAT CUT-OUT SET POINT (MAX.)	FLANGE/PROCESS RTD/THERMOCOUPLE SET POINT (MAX.)	T'BOX RTD/THERMOCOUPLE CUT-OUT SET POINT (MAX.)
T6/T85°C	40mm	75°C	75°C	80°C	80°C
T5/T100°C	40mm	90°C	90°C	95°C	95°C
T4/T135°C	40mm	125°C	125°C	130°C	130°C
T3/T200°C	100mm	190°C	125°C	195°C	130°C
T2/T300°C	150mm	285°C	125°C	290°C	130°C
T1/450°C	200mm	435°C	125°C	440°C	130°C
220°C	100mm	205°C	125°C	210°C	130°C

Non-Stand Off version:

T CLASS	FLANGE/PROCESS THERMOSTAT SET POINT (MAX.)	T'BOX THERMOSTAT CUT-OUT SET POINT (MAX.)	FLANGE/PROCESS RTD/THERMOCOUPLE SET POINT (MAX.)	T'BOX RTD/THERMOCOUPLE CUT-OUT SET POINT (MAX.)
T6/T85°C	75°C	75°C	80°C	80°C
T5/T100°C to T1/T450°C	80°C	80°C	80°C	80°C

Version without Thermostats:

T-CLASS	HEATER ORIENTATION	MINIMUM STAND-OFF	MIN QTY OF HEATSHIELDS
T1/450°C	HORIZONTAL	300mm	3
T2/300°C	VERTICAL*	300mm	3
T2/200°C	HORIZONTAL	200mm	2
TEMPERATURE CLASS WITH 150mm STAND-OFF			
T6/85°C-T3/200°C	ANY	150mm	0
TEMPERATURE CLASS WITH ZERO STAND-OFF			
T6/85°C-T5/100°C	ANY	0	0

Max Flange Sensor Setpoint - See tables above (Stand Off version & Non-Stand Off version) for RTD/TC and Thermostat set temperatures.

### Type RFA:

The Type RFA is identical to the Type FP but with the following differences:

- Only one size of enclosure.
- Enclosure and Cover can be manufactured from aluminium, cast mild steel or stainless steel and the base from mild steel, stainless steel or brass.

Variation models:

RFA-R: Rod type elements are used. Over temperature protection is by a manual reset thermostat within the process or of the process connection.

RFA-C: Core type elements are used. Over temperature protection is by a manual reset thermostat within the process or of the process connection.

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RFA-CA: Cartridge type elements are used. Over temperature protection is by a manual reset thermostat within the process or of the process connection

RFT: model for thermostatic control applications containing only a thermostat or RTD or thermocouple with capillary housed in a pocket.

Alternative manufacturing address: EXHEAT Industrial Ltd, Threxton House, Threxton Road Ind Estate, Watton, Thetford, Norfolk, IP25 6NG, UK.

### 12. Report Number

Intertek Report: 103867041CHE-001 dated 14<sup>th</sup> September 2023.

### 13. Special Conditions of Certification

#### (a). Special Conditions of Use

- All safety devices shall operate independently of any measurement or control devices required for operation. Resetting the safety devices shall only be manual.
- The anti-condensation heaters must be wired in accordance with the manufacturer drawings.
- The installer and user must ensure that the terminal enclosure and its associated stand-off are not lagged.
- For assembly dummy flange version, the installer and/or end user shall ensure that the dummy flange is fully seal welded to the lagging cover and that the cover prevents ingress of hazardous area.
- When equipment is painted, potential electrostatic charging hazard. Clean only with a wet cloth (or see instructions).
- No modification must be made to the flamepaths of the enclosure without prior consultation with the manufacturer.
- When Titanium Element Tubes are utilised, these must be installed in areas where they are not susceptible to mechanical impact.
- For assembly heat shield version, the installer and/or end user shall ensure that the heat shields are always left unobstructed.
- Conditions of certification concerning components already certified depend on the relevant certificates.
- For FP-B model, the installer and/or end user must install and operate a process connection flange, process or element overtemperature control safety device, the sensing element of which must be fitted in the location expected, under the users responsibility, to reach the highest temperature under normal operating conditions. All safety devices shall operate independently of any measurement or control devices required for operation. Resetting the safety devices shall only be manual.

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- For FP-BH model, the installer and/or end user must install and operate an element overtemperature control safety device per heater stage phase, the sensing element of which must be fitted the element surface in the location expected, under the users responsibility, to reach the highest temperature under normal operating conditions. All safety devices shall operate independently of any measurement or control devices required for operation. Resetting the safety devices shall only be manual.

(b). Conditions of Manufacture - Routine Tests

- According to Clause 16.1 of EN 60079-1 each welded pocket shall be submitted to an overpressure test of 30bar for a minimum of 10 seconds. No deformation or damage shall occur.
- According to Clause 16.1 of EN 60079-1 each enclosure shall be submitted to an overpressure test for a minimum of 10 seconds at the following pressure:

Enclosure Size	Test Pressure
FP4 – FP10	22.12bar
FP12 – FP20	25.79bar
RFA	N/A – Enclosure tested at the exemption pressure

- All tests must be recorded.

### 14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) have been identified and assessed in Intertek Report: 103867041CHE-001 dated 14<sup>th</sup> September 2023.

### 15. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
<b>FP:</b>			
Schedule of Temperature Transmitters, Breathers / Drains, Buttons & Switches – FP Series Heaters (2 Pages)	2004.01.13	2	20.07.2023
Schedule of Terminals and Insulators – FP Series Heaters (2 Pages)	2004.01.14	1	06.03.2023
7/16” Bore Tubing Nut, Olives and Hole Drilling Details ATEX & IECEX & UKEX Certified	2004-01-79	6	07.03.23
10mm Bore Tubing Nut, Olive and Hole Drilling Details. ATEX & IECEX & UKEX Approved	2004-02-97	6	07.03.23
3/8” Bore Tubing Nut , Olive and Hole Drilling Details, ATEX & IECEX & UKEX Approved	2004-02-98	6	07.03.23
8mm Bore Tubing Nut, Olive and Hole Drilling Details. ATEX & IECEX & UKEX Approved	2004-02-99	4	07.03.23
12mm Bore Tubing Nut, Olive and Hole Drilling Details. ATEX & IECEX & UKEX Approved	2004-08-89	6	07.02.23
FP Type Solid Heater (Cast In Elements Variant) General Arrangement ATEX & IECEX & UKEX Certified	2004-21-01	17	20/07/23

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Typical Cut-Out Wiring Diagram for ATEX & IECEx & UKEX FP & FP-G Type Heater Range Overtemperature Protection (2 Pages)	2004-21-03	4	13.09.22
16mm Bore Tubing Nut, Olive and Hole Drilling Details. ATEX, IECEx & UKEX Approved	2004-21-04	5	07.03.23
FP-H Hazardous Air Type Heater General Arrangement ATEX & IECEx & UKEX Certified	2004-21-70	01	20.07.23
FP-B or BH Hazardous Type Heater No Stats General Arrangement ATEX & IECEx & UKEX Certified	2004-21-71	01	20.07.23
12.5mm Bore Tubing Nut, Olive and Hole Drilling Details. ATEX & IECEx & UKEX Approved	2004-21-86	5	07.03.23
FP Type Heater Range Alternative Terminal Box Lid/Base ATEX & IECEx & UKEX Certified	2004-21-87	8	13.09.22
ATEX & IECEx & UKEX Certified Alternative Cast Terminal Box Lid FP Type Heater Range	2004-21-88	7	13.09.22
FP Type Heater Range Alternative Terminal Box Range ATEX & IECEx & UKEX Certified	2004-21-89	10	13.09.22
FP Type Heater General Arrangement ATEX & IECEx & UKEX Certified	2004-21-90	18	12.09.23
FP Type Heater Ex d II C Detail Drawing ATEX & IECEx & UKEX Certified (3 Pages)	2004-21-91	8	13.09.22
FP Type Heater Range ATEX / IECEx / UKEX Label Details	2004-21-92	13	20.07.23
FP Type Heater Range Terminal Box Detail Apparatus Group IIXC ATEX & IECEx & UKEX Certified	2004-21-93	11	14.09.22
FP Type Heater Range Terminal Box Lid Detail ATEX & IECEx & UKEX Certified	2004-21-94	7	14.09.22
FP (G) Type Heater General Arrangement ATEX & IECEx & UKEX Certified	2004-21-96	17	12.09.23
Thermostat Pocket for Flameproof Heaters ATEX & IECEx & UKEX Approved (2 Pages)	2004-21-97	8	20.07.23
FP Type Heater General Arrangement Drawing Apparatus Group IIC ATEX & IECEx & UKEX Certified with Dummy Flange	2004-21-99	10	20.07.23
Installation, Operation & Maintenance Instructions Manual Appendix X IOM Ex Heater Annex (22 Pages)	Cert 005	0	04th October 2022
<b>RFA:</b>			
RFA-C Core Type Non Stand Off Version General Arrangement Drawing ATEX , IECEx & UKEX Page 1 of 2	2004.16.01	06	18.07.23
RFA-C Core Type Stand Off Version General Arrangement Drawing ATEX , IECEx & UKEX Page 2 of 2	2004.16.01	06	18.07.23

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RFA-CA Cartridge Type Non Stand Off Version General Arrangement Drawing ATEX, IECEx & UKEX Page 1 of 2	2004.16.02	02	18.07.23
RFA-CA Cartridge Type Stand Off Version General Arrangement Drawing ATEX, IECEx & UKEX Page 2 of 2	2004.16.02	02	18.07.23
RFA Rod Type Non Stand Off Version General Arrangement Drawing ATEX, IECEx & UKEX Page 1 of 2	2004.16.03	01	18.07.23
RFA Rod Type Stand Off Version General Arrangement Drawing ATEX, IECEx UKEX Page 2 of 2	2004.16.03	01	18.07.23
RFA & FP*-T Thermostat, RTD or TC Option General Arrangement Drawing ATEX, IECEx & UKEX	2004.16.04	01	18.07.23
RF** Type Terminal Box Body ATEX, IECEx & UKEX	2004.16.12	04	18.07.23
RF** Type Base Machining Parameters and Layout ATEX, IECEx & UKEX (3 Pages)	2004.16.22	05	18.07.23
RFA-R, RFA-C & RFA-CA Immersion Heater Nameplates & Warning Labels (2 Pages)	2004.16.41	05	18.07.23
RFT and FP*-T Thermostat Only Option Nameplates & Warning Labels ATEX & IECEx Approved Page 1 of 2	2004.16.42	02	18.07.23
RFT and FP*-T Thermostat Only Option Nameplates & Warning Labels ATEX, IECEx & UKEX Page 2 of 2	2004.16.42	02	18.07.23
RFA-R, RFA-C & RFA-CA Wiring Diagrams General Arrangement Drawing ATEX, IECEx & UKEX	2004.16.43	03	09.09.22
RF** Type Immersion Heater Terminal Box Lid ATEX, IECEx & UKEX	2004.16.90	04	18.07.23
RFA-C Fixing Boss Variant Base Assembly Detail ATEX, IECEx & UKEX Page 1 of 2	2004.16.95	05	18.07.23
RFA-C Flange Fixing Variant Base Assembly Detail ATEX, IECEx & UKEX Page 2 of 2	2004.16.95	05	18.07.23
RFA-CA Fixing Boss Variant Base Assembly Detail ATEX, IECEx & UKEX Page 1 of 2	2004.16.96	02	18.07.23
RFA-C Flange Fixing Variant Base Assembly Detail ATEX, IECEx & UKEX Page 2 of 2	2004.16.96	02	18.07.23
RFA-R Fixing Boss Variant Base Assembly Detail ATEX, IECEx & UKEX Page 1 of 2	2004.16.97	01	18.07.23
RFA-R Flange Fixing Variant Base Assembly Detail ATEX, IECEx & UKEX Page 2 of 2	2004.16.97	01	18.07.23
RF** Typ Thermostat Pockets General Arrangement Industrial Product ATEX & IECEx Approved	2004.16.98	04	18.07.23
Installation, Operation & Maintenance Instructions Manual FP & RFA Type Flameproof Immersion Heaters and Thermostats (43 Pages)	-	2 <sup>nd</sup> Edition	SEPT 2023

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