THORNE & DERRICK INTERNATIONAL
Thorne & Derrick
+44 (0) 191 410 4292
www.heatingandprocess.com

CSA Group

Certificate of Compliance

Certificate: 70188219 **Master Contract:** 187735

Project: 70188219 **Date Issued:** October 18, 2018

Issued to: **EXHEAT Ltd.**
Threxton House
Threxton Road Industrial Estate
Watton
Norfolk, IP25 6NG
UNITED KINGDOM

Attention: Mr. James Pettman

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and US Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only

C US

Issued by:

James Jarman

PRODUCTS

Class 2848-01– HEATERS-Industrial and Laboratory - For Hazardous Locations

The FXB, FXH, and FXS Range of Flameproof, Explosionproof and Dust-ignitionproof Enclosure Heaters, see Model Code Structure for electrical ratings breakdown.

Ex db IIC T4…T3* Gb
Ex tb IIIC T135ºC… T200ºC* Db

-50ºC… -60ºC* ≤ Ta ≤ +40ºC…+180ºC*

* - model dependent, see Model Code Structure

Environmental ratings are not endorsed by CSA. However, the heaters have been assessed against the requirements for Type 4X according to C22.2 No. 94.1-15 and C22.2 No. 94.2-15.

Certificate: 70188219 **Master Contract:** 187735

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Class 2848-81– HEATERS-Industrial and Laboratory-For Hazardous Locations-Certified to U.S. Standards

The FXB, FXH, and FXS Range of Flameproof, Explosionproof and Dust-ignitionproof Enclosure Heaters, see Model Code Structure for electrical ratings breakdown.

Class I, Zone 1, AEx db IIC T4…T3* Gb
Zone 21, AEx tb IIIC T135ºC… T200ºC* Db

-50ºC…-60ºC* ≤ Ta ≤ +40ºC…+180ºC*

* - model dependent, see Model Code Structure

Environmental ratings are not endorsed by CSA. However, the heaters have been assessed against the requirements for Type 4X according to UL 50 (2015) and UL 50E (2015).

Model Code Structure

Model Code	XXX	-	XX	-	XXX
	I		II		III

I. Enclosure Type

FXB – Unregulated block type extruded enclosure heater with fins on front and back, available in 225 mm and 325 mm lengths, all other dimensions are the common to both lengths.

FXH – Unregulated flat block type enclosure heater with fins on front face only, available in 90 mm and 225 mm length. Models use same fin design but differ significantly in size and features.

FXS - Self-regulating type enclosure heater that does not follow the dimensional specifications of the FXB or FXH models.

The FXS enclosure is only available with the self-regulating element.

II. Heater Type

FD – Fixed resistance heater element

SR – Self-regulating heater element

III. Heater Rating

XXX – Heater Duty in Watts, e.g. 500

See temperature table for each model maximum wattage

Electrical Ratings

FXB Fixed Resistance with a 325mm extrusion – 511W, 100 - 300VAC,1ϕ
FXB Fixed Resistance with a 225mm extrusion – 376W, 100 - 300VAC, 1ϕ
FXH Fixed Resistance with a 225mm extrusion – 204W, 100 - 300VAC, 1ϕ
FXH Fixed Resistance with a 90mm extrusion – 85W, 100 - 300VAC, 1ϕ
FXS, FXB, FXH Self Regulating – 100 - 265VAC, 1ϕ
Rated up to 511 watts maximum.

Ambient Temperature Range for Hazardous Locations

Depending upon configuration and construction materials, the Maximum Ambient Temperature Range of the heaters is -60°C to +180°C.

Temperature Tables

Heaters fitted with a Fixed Resistance Heater Element
Model Code: FXB & FXH – FD - XXX

Body	Type	Max Rating	Extrusion Size	Minimum Ambient Temperature	Maximum Ambient Temperature	Temperature Class Group II / III
FXB	FD	511W	325	-60°C	+40°C	T3 / T200°C
FXB	FD	252W	325	-60°C	+40°C	T4 / T135°C
FXB	FD	252W	325	-60°C	+65°C	T3C / T160°C
FXB	FD	252W	325	-60°C	+70°C	T3B / T165°C
FXB	FD	252W	325	-60°C	+85°C	T3A / T180°C
FXB	FD	252W	325	-60°C	+105°C	T3 / T200°C
FXB	FD	376W	225	-60°C	+40°C	T3 / T200°C
FXB	FD	210W	225	-60°C	+40°C	T4 / T135°C
FXB	FD	210W	225	-60°C	+65°C	T3C / T160°C
FXB	FD	210W	225	-60°C	+70°C	T3B / T165°C
FXB	FD	210W	225	-60°C	+85°C	T3A / T180°C
FXB	FD	210W	225	-60°C	+105°C	T3 / T200°C
FXH	FD	204W	225	-60°C	+40°C	T3B / T165°C
FXH	FD	135W	225	-60°C	+40°C	T4 / T135°C
FXH	FD	135W	225	-60°C	+65°C	T3C / T160°C
FXH	FD	135W	225	-60°C	+70°C	T3B / T165°C
FXH	FD	135W	225	-60°C	+85°C	T3A / T180°C
FXH	FD	135W	225	-60°C	+105°C	T3 / T200°C
FXH	FD	85W	90	-60°C	+40°C	T3 / T200°C
FXH	FD	45W	90	-60°C	+40°C	T4 / T135°C
FXH	FD	45W	90	-60°C	+65°C	T3C / T160°C
FXH	FD	45W	90	-60°C	+70°C	T3B / T165°C
FXH	FD	45W	90	-60°C	+85°C	T3A / T180°C

Body	Type	Max Rating	Extrusion Size	Minimum Ambient Temperature	Maximum Ambient Temperature	Temperature Class Group II / III
FXH	FD	45W	90	-60°C	+105°C	T3 / T200°C

Heaters fitted with a Self-Regulating Heater Element
Model Code: FXB, FXH & FXS – SR – XXX

Body	Type	Nominal Rating	PTC Chip Rated Temperature	Minimum Ambient Temperature	Maximum Ambient Temperature	Temperature Class Group II / III
FXS	SR	-	110˚C	-60°C	+130°C	T4 / T135°C
FXB	SR	240W	110˚C	-60°C	+130°C	T4 / T135°C
FXH	SR	100W	110˚C	-60°C	+130°C	T4 / T135°C
FXS	SR	-	180˚C	-60°C	+160°C/+180˚C*	T3 / T200°C
FXB	SR	350W	180˚C	-60°C	+160°C/+180˚C*	T3 / T200°C
FXH	SR	200W	180˚C	-60°C	+160°C/+180˚C*	T3 / T200°C

* Requires a cable gland rated for a minimum Continuous Operating Temperature of 200˚C

Conditions of Acceptability:

i. The heaters include external non-metallic parts. The user shall therefore ensure that the heaters are not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the heaters should be done only with a damp cloth.
ii. To facilitate effective heat dissipation, models of the FXB with a Fixed Resistance Heater Element (FXB-FD) shall be installed with the cooling fins in the vertical orientation only.
iii. The FXB, FXH and FXS heaters must be installed within an enclosure, suitably certified by a Nationally Recognized Testing Laboratory (NRTL), SCC Accredited body, or both, as applicable.
iv. Models of the FXB and FXH with a Fixed Resistance Heater Element require additional temperature control in the end application. The suitability of which is to be approved by a Nationally Recognized Testing Laboratory (NRTL), SCC Accredited body, or both, as applicable.
v. The suitability of the FXB, FXH and FXS heaters for use in the end application must be approved by a Nationally Recognized Testing Laboratory (NRTL), SCC Accredited body, or both, as applicable.
vi. Although the FXB, FXH and FXS heaters have been evaluated against the requirements of Type 4X and IP66, they are not marked as such to prevent potential misuse.

APPLICABLE REQUIREMENTS

C22.2 No. 0-10 (R2015)	-	General Requirements – Canadian Electrical Code, Part II
C22.2 No. 88-1958 (R2017)	-	Construction and test of industrial heating equipment
C22.2 No. 60079-0:15	-	Explosive atmospheres – Part 0: Equipment – General requirements
C22.2 No. 60079-1:16	-	Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d”
C22.2 No. 60079-31:15	-	Explosive atmospheres — Part 31: Equipment dust ignition protection by enclosure “t”
C22.2 No. 94.1-15	-	Enclosures for Electrical Equipment, Non-Environmental Considerations
C22.2 No. 94.2-15	-	Enclosures for electrical equipment, environmental considerations
C22.2 No. 60529:16	-	Degrees of protection provided by enclosures (IP Code)
UL 508:2018, 18th Edition	-	UL Standard for Safety for Industrial Control Equipment
ANSI/UL 60079-0:2013	-	UL Standard for Safety Explosive atmospheres – Part 0: Equipment – General requirements
ANSI/UL 60079-1:2015	-	UL Standard for Safety Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures “d”
ANSI/UL-60079-31:2015	-	UL Standard for Safety Explosive Atmospheres – Part 31: Equipment Dust Ignition Protection by Enclosure “t”
UL 50:2015	-	Enclosures for Electrical Equipment, Non-Environmental Considerations
UL 50E:2015	-	UL Standard for Safety Enclosures for Electrical Equipment, Environmental Considerations
ANSI/IEC 60529:2004 (R2011)	-	Degrees of Protection Provided by Enclosures (IP Code)

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Markings appear on a minimum 0.02" (0.5mm) thick stainless steel 316 plate, secured to the body with screws or are laser etched on the housing.

- CSA Monogram with c us Indicator (The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only), as shown on the Certificate of Compliance.
- Manufacturers name "EXHEAT Limited", or CSA Master Contract number "187735" adjacent the CSA Mark, in lieu of manufacturers name.
- Model designation, as specified in the PRODUCTS section, above.
- Complete electrical rating, as specified in the PRODUCTS section, above.
- Maximum ambient temperature rating, as specified in the PRODUCTS section, above.
- Date code / Serial number traceable to month and year of manufacture.
- Hazardous locations designation CAN; "Ex db IIC T4…T3 Gb; Ex tb IIIC T135ºC… T200ºC Db", as specified in the PRODUCTS section, above or equivalent
- Hazardous locations designation US; "Class I, Zone 1, AEx db IIC T4…T3 Gb; Zone 21, AEx tb IIIC T135ºC… T200ºC Db", as specified in the PRODUCTS section, above or equivalent
- Temperature code, as specified in the PRODUCTS section, above.
- For Canadian Zone marked products, the Certificate Number Reference "18CA70188219X" next to the CSA logo or preceded by "CSA" agency name.
- Conductor markings - Live – Brown; Neutral – Blue; Earth – Green and Yellow.
- Warning – Hot Surface, risk of burn; or equivalent, in both English and French.
- Warning – Do not open when an explosive atmosphere is present and Avertissement – ne pas ouvrir en présence d'une atmosphère explosive; or equivalent.

Supplement to Certificate of Compliance

Certificate: 70188219 **Master Contract:** 187735

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
70188219	Oct. 18, 2018	Original Certification of the FXB, FXH, and FXS Range of Flameproof, Explosionproof and Dust-ignitionproof Enclosure Heaters for use in North American Zoned locations.